

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MASIMO CORPORATION,
Petitioner,

v.

APPLE INC.,
Patent Owner.

Case IPR2023-00664
Patent 11,106,352

DECLARATION OF DR. ANDREW COCKBURN

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I. QUALIFICATIONS AND BACKGROUND INFORMATION

1. My education and experience are described more fully in the attached curriculum vitae (Appendix A). I am a Professor at the Department of Computer Science and Software Engineering at the University of Canterbury, New Zealand. I also currently head the HCI (Human-Computer Interaction) and Multi-Media research group at the University of Canterbury.

2. In 1988, I was awarded a Bachelor of Science with Honors in Computer Science from the University of York, England.

3. In 1993, I was awarded a Ph.D. from the University of Stirling, Scotland. My thesis was on “Computer Supported Cooperative Work” which relates to forms of group interaction supported on computers.

4. In 1993, I joined the University of Canterbury as a Lecturer in the Department of Computer Science (now the Department of Computer Science and Software Engineering). I was subsequently promoted to a Senior Lecturer, and then an Associate Professor, before my appointment as a Professor in 2010. I currently hold the title of Professor.

5. I have over 30 years of experience in the area of HCI. The field of HCI is generally concerned with ways of understanding and improving the interaction between humans and computers, with a view to understanding, evaluating, designing, and building new styles of interactions that improve on one

or more of the end goals of making computers faster to learn, more intuitive, more efficient to use, and more subjectively satisfying.

6. Throughout my career, I have published the results of many research projects that have involved building new user interfaces or reviewing existing user interfaces for performing a particular task, and evaluating their effectiveness. This includes publications relating to:

- (a) investigating user experiences with web navigation interfaces, for example when using the “back” button on web browsers;

- (b) reviewing and improving various interface schemes for traversing through documents in computer applications, including zooming, scrolling, and other techniques;

- (c) analyzing new interfaces for text entry on mobile and touch-sensitive devices;

- (d) addressing the problems arising from the small form factor of mobile devices with touch-sensitive displays, including wearable technologies;

- (e) examining the influence of haptic feedback on user performance with mouse and touchscreen input devices;

- (f) evaluating the importance of spatially stable displays in user interfaces; and

(g) designing, analyzing and evaluating gesture-based input techniques for various user activities, including music data entry, web navigation, text entry, and scrolling.

7. I also have extensive experience in designing and building new user interfaces and reviewing existing user interfaces. This includes a number of projects regarding the design, development and evaluation of user interfaces that I have undertaken with companies in the computing and HCI industry, such as:

(a) working with Airbus SAS in 2016 on methods to assist pilots' gesture-based interaction with touchscreens in turbulent environments;

(b) working with Hewlett-Packard Research Labs from 2010-2012 on the design and evaluation of gesture-based pointing techniques for remote displays, such as interactive TVs;

(c) a number of projects from 2006-2010 working with Logitech on the design, development, evaluation and improvement of user interfaces for next generation mice, including in relation to scrolling and window management tasks;

(d) working with IBM Almaden Research in 2006 on the design, development and evaluation of user interfaces for gesture-based text entry on mobile devices;

(e) working with Digit Wireless in 2002 on the evaluation of user performance for user interfaces for digital text entry on mobile devices; and

(f) working with Microsoft Research in 1999 on the development, evaluation and improvement of user interfaces for web browsing, in particular the mechanisms for revisiting pages (such as through the “back” button or bookmarks).

8. At the University of Canterbury, I currently teach a course on HCI for final year undergraduate students and a course on research methods in HCI for postgraduate students.

9. In the past, I have also taught introductory computer programming courses for first year students across disciplines, which included the implementation of graphical user interfaces.

10. I also manage an active research lab with a number of Ph.D. students. I have previously supervised fourteen students to successful completion of their Ph.D.s in the field of HCI.

11. The Association for Computing Machinery (ACM) is the world’s largest scientific and educational computing society. In 2015, I was elected to the ACM Conference on Human Factors in Computing Systems (CHI) Academy, which honors the principal leaders of the field of HCI.

12. I also annually attend conferences relating to the field of HCI and regularly read journals that cover research in the field of HCI.

13. To keep abreast with industry trends, I regularly read broader journals, magazines and websites related to computer science and technology, including

Communications of the ACM, ACM TechNews, BBC Technology, and New York Times Technology.

14. A detailed list of my other professional activities, memberships, and speaking engagements is included in my CV.

15. I have been engaged as an expert by Fish & Richardson P.C. on behalf of Apple Inc. (“Patent Owner”) for the above-captioned *Inter Partes* Review involving United States Patent No. 11,106,352 (“the ’352 Patent”).

16. I have reviewed and am familiar with the specification of the ’352 Patent. I understand that the ’352 Patent has been provided as Exhibit 1001. I have further reviewed, and am familiar with, the following materials from the record of the present proceeding:

- Petition for *Inter Partes* Review of the ’352 Patent (Paper 1)
- U.S. Patent No. 11,106,352 (“the ’352 patent”) (EX1001)
- File History of the ’352 patent (EX1002)
- Declaration of Craig Rosenberg, Ph.D. (EX1003)
- *Curriculum Vitae* of Craig Rosenberg, Ph.D. (EX1004)
- U.S. Patent Appl. Publication No. US 2012/0129495 (“Chae”) (EX1005)
- U.S. Patent Appl. Publication No. US 2013/0305351 (“Narendra”) (EX1006)

- *Android 4.2 lock screen widgets* (MP4 copy of November 12, 2012 YouTube video) (“Android”) (EX1007)
- U.S. Patent Appl. Publication No. US 2014/0189577 (“Shuttleworth”) (EX1008)
- U.S. Patent Appl. Publication No. US 2013/0227418 (“de Sa”) (EX1009)
- U.S. Patent Appl. Publication No. US 2015/0095819 (“Hong”) (EX1010)
- U.S. Patent Appl. Publication No. US 2015/0346976 (“Karunamuni”) (EX1011)
- Excerpts from *The Design of Everyday Things*, Norman, Donald A., Doubleday, 1988 (“Norman”) (EX012)
- “Do Interface Standards Stifle Design Creativity,” archive copy of “<http://www.useit.com/alertbox/990822.html>” from August 22, 1999, Nielsen, Jakob (“Nielsen 1”) (EX1013)
- “Enhancing the Explanatory Power of Usability Heuristics,” *Human Factors in Computing Systems*, 1994, Nielsen, Jakob, (“Nielsen 2”) (EX1014)

17. I have been asked to provide my technical review, analysis, insights and opinions regarding the '352 Patent, particularly in relation to the Petition's challenges of claims 1-24 ("Challenged Claims").

18. I have no financial interest in the parties or in the outcome of this proceeding. I am being compensated for my work as an expert on an hourly basis. My compensation is not dependent on the outcome of these proceedings or the content of my opinions.

II. LEVEL OF ORDINARY SKILL IN THE ART

19. I understand that the teachings of the prior art are viewed through the eyes of a POSITA. My analysis in this declaration is thus based on the perspective of one having the level of knowledge and skill described below as of the earliest effective filing date of the '352 patent (May 16, 2017).

20. For purposes of assessing the level of ordinary skill in the art, I have considered the types of problems encountered in the art, the prior solutions to those problems found in prior art references, the speed with which innovations were made at that time, the sophistication of the technology, and the level of education of active workers in the field. As previously described, I have reviewed and understand the '352 Patent. Based on my above-described experience, I am familiar with and know of the capabilities of a POSITA in this field during the mid to late 2010s.

21. Based on the factors that I described above, I believe a POSITA in the field of the '352 Patent would have had at least a bachelor's degree in computer science, computer engineering, electrical engineering, human-computer interaction, or a related field, and would have had at least two years of relevant work experience in the design and development of graphical user interfaces (GUIs), human-computer interfaces, or equivalents thereof. Additional education could substitute for professional experience and significant work experience could substitute for formal education. I possessed at least these qualifications and capabilities myself in the relevant timeframe that I have applied for the '352 patent.

III. THE '352 PATENT

22. The '352 Patent is related to “user interfaces (‘UI’) and associated processes that may be implemented on an electronic device, such as portable multifunction device..., with a display[and] a touch-sensitive surface.” EX1001, 37:31-38. As described in the '352 Patent, when “the display has transitioned from a screen-off state to a screen-on state,” “wake screen user interface 504 is displayed by the display.” EX1001, 38:14-16. An example of a wake screen user interface 504 is illustrated in FIG. 5B. EX1001, 38:32-33.

wake screen user interface

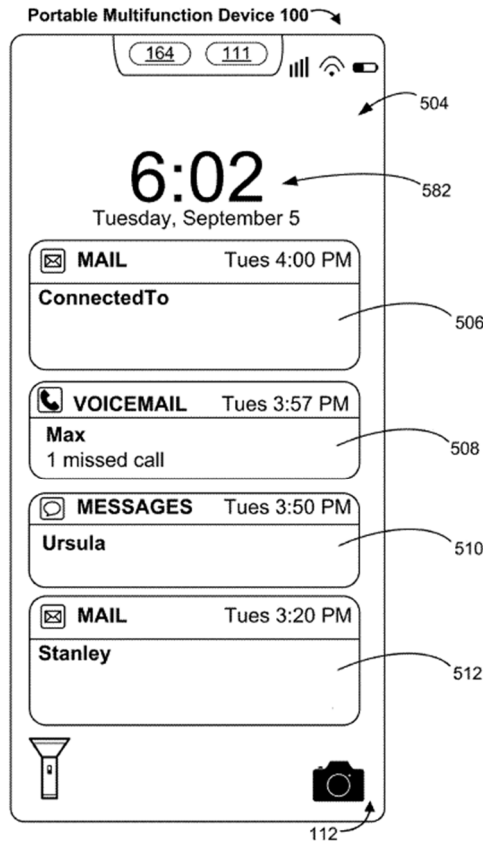


Figure 5B

EX1001, FIG. 5B

23. As further explained in the '352 Patent, “FIGS. 5CC-5CQ illustrate input for accessing a control center user interface 5138, a mini application user interface 5140, and a user interface underlying wake screen user interface (e.g., home screen user interface 522) from wake screen user interface 504.” EX1001, 44:17-50. For example, in response to “an input (e.g., a leftward swipe) that is initiated by a contact on touch screen,” “wake screen user interface 504 slides to the left and control center user interface 5138 is revealed.” *Id.* As another

example, in response to “an input (e.g., a rightward swipe) that is initiated by a contact on touch screen 112,” wake screen user interface 504 slides to the right and mini application user interface 5140 is revealed.” *Id.* In another example, in response to “an input by a contact on touch screen 112 that is initiated at a lower edge of touch screen 112,” “display of wake screen user interface 504 is replaced by display of home screen user interface 522.” *Id.*

24. The '352 Patent describes an example of “home screen user interface 522” as “a user interface for a menu of applications.” EX1001, 39:20-22. The '352 Patent further discloses that “[m]ini application user interface 5140 displays mini application objects 583, 585, 587, and 589 that include a subset of content from application,” and “a pre-defined input on a mini application object launches the corresponding application.” EX1001, 49:34-36, 49:50-52. The '352 Patent also refers to the “mini application user interface 5140” as “widget user interface 5140.” EX1001, 48:59-49:3, 52:8-41. Examples of home screen user interface 522 and widget user interface 5140 are shown below.

home screen user interface

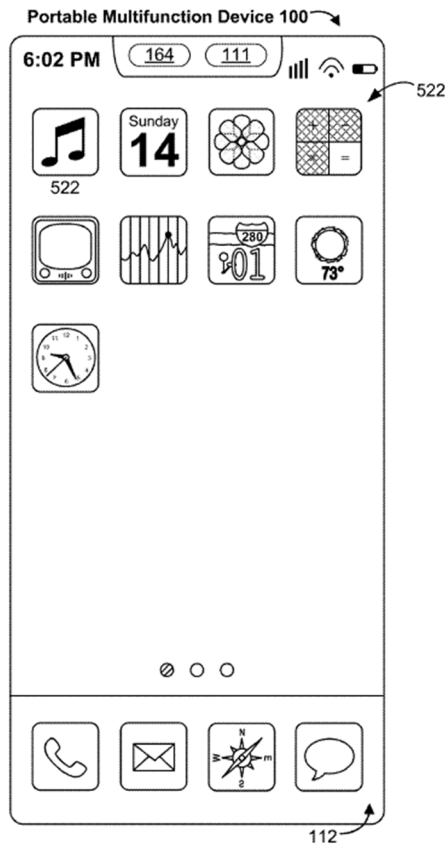


Figure 5H

widget screen user interface

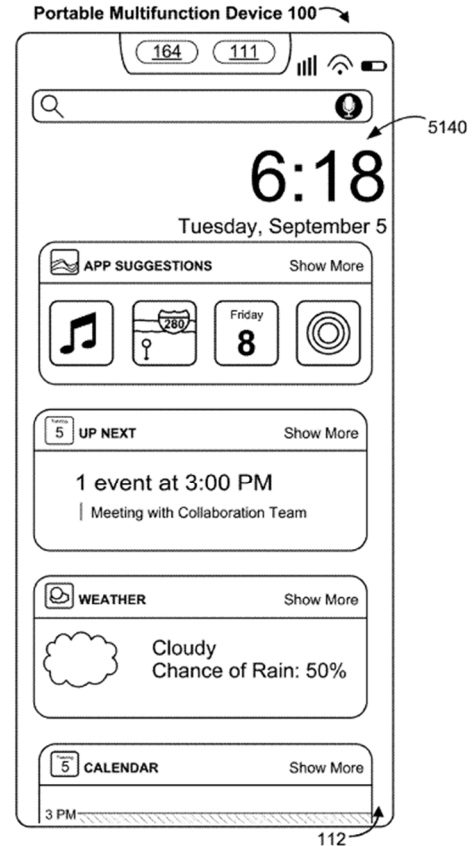


Figure 5CK

EX1001, FIGS. 5H, 5CK

25. The challenged claims of the '352 Patent recite specific limitations for navigating between particular screens using gestures, based on system state (e.g., “power saving state”), particular criteria (e.g., “display-waking”), and directional inputs and actions (e.g., “detecting a first input that is directed to a portion of the wake screen user interface and includes first movement”). *See, e.g.*, EX1001, Claim 1. The benefits of the '352 Patent include, by way of example and without limitation, “reduce[d] number, extent, and/or nature of the inputs from a user and

produce a more efficient human-machine interface” and arise from the specific arrangement of claimed elements that improve functionality of user interfaces.

EX1001, 1:55-63.

IV. ANALYSIS REGARDING THE CLAIMS OF THE '352 PATENT IN LIGHT OF THE PRIOR ART

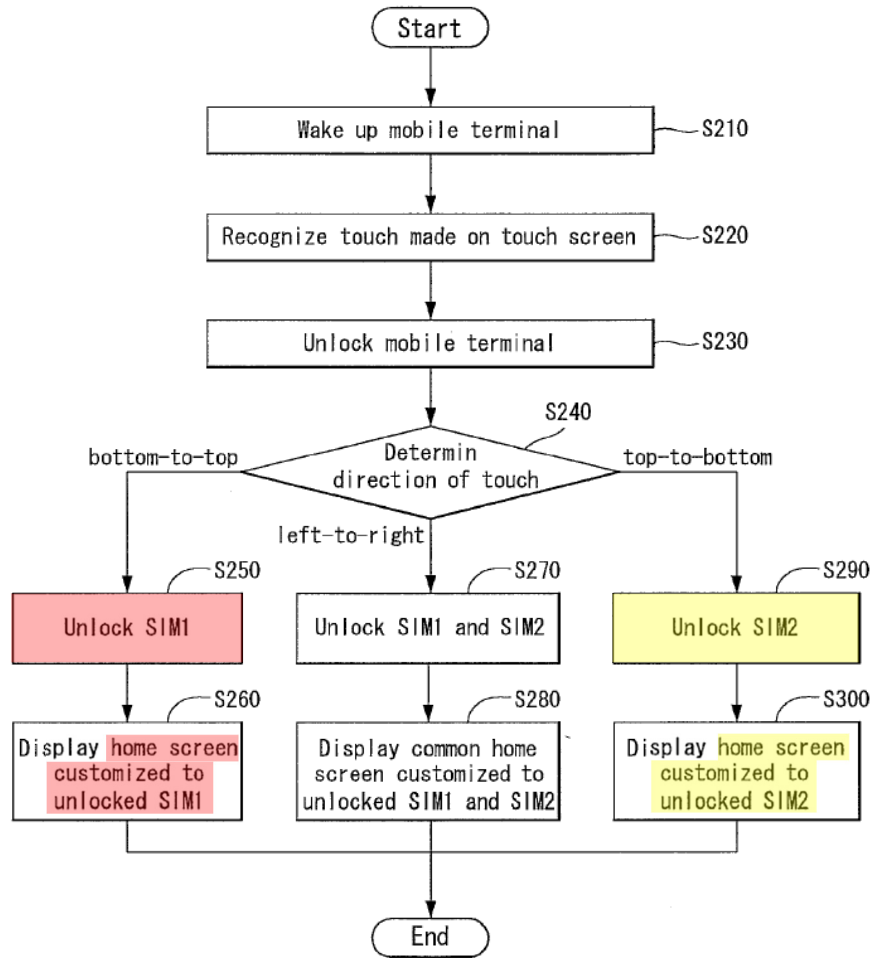
26. I have been asked by Patent Owner to evaluate the contentions of Petitioner and Dr. Rosenberg regarding the allegation that Chae alone or in combination with Narendra, Shuttleworth, Karunamuni, Hong, and/or Android render obvious the invention set forth in claims 1-24. I currently hold the opinions expressed in this declaration. Based upon my knowledge and experience in this field and my review of Chae, Narendra, Shuttleworth, Karunamuni, Hong, and Android, it is readily apparent that the references and the proposed combinations fail to render obvious several elements recited in claims 1, 9, and 17. Although I identify a number of specific claim elements below, I note that there may be additional claim elements lacking from the references and the proposed combinations even though they are not expressly identified below. Indeed, my analysis may continue after the signing of this declaration, in which case I may provide further testimony regarding additional claim elements and other reasons regarding the references and the proposed combinations.

A. The Combination of Chae and Narendra

1. Overview of Chae

27. As noted in Chae's "Field" of the invention section, Chae is directed to "a mobile terminal including *a plurality of user-identification modules* and an operating method thereof." EX1005, [0003]. Chae's "mobile terminal 100 includes a first SIM (SIM1) and a second SIM (SIM2)." EX1005, [0003]. As shown in Chae's FIG. 3 (reproduced below), Chae discloses displaying a home screen associated with one or more SIM cards based on the direction of a detected touch. EX1005, [0101]-[0103], FIG. 3. For instance, a controller 180 of the mobile terminal 100 "unlocks the first SIM (SIM1) when the directivity of the line is from bottom-to-top" and "displays a home screen customized to the first SIM (SIM1) on the touch screen." EX1005, [0105]. "When the user draws a line in a top-to-bottom direction, the controller 180 unlocks the second SIM (SIM2) at step S290 and displays a home screen customized to the second SIM (SIM2) on the touch screen." EX1005, [0108]. "When a user draws a line in a left-to-right direction on a touch screen, the controller 180 unlocks both of the first and second SIMs (SIM1 and SIM2) at step S270, and displays a home screen including common items of the first and second SIMs (SIM1 and SIM2) on the touch screen." EX1005, [0110].

FIG. 3



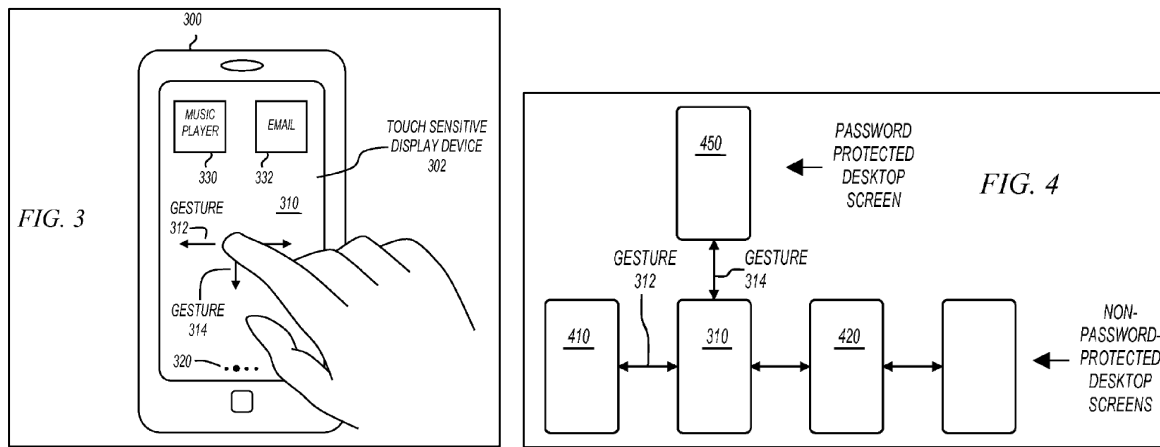
EX1005, FIG. 3.

28. As can be appreciated from the foregoing, Chae's primary objective is to use the direction of touch gesture on the touch screen to determine which home screen associated with one or both of the first and second SIM cards to display.

2. Overview of Narendra

29. In contrast, Narendra uses detected touch direction to determine whether or not a password protected desktop screen should be displayed. In

particular, Narendra is directed to a mobile device that “includes a user interface that has a plurality of non-password-protected desktop screens and at least one password protected desktop screen.” EX1006, Abstract. Narendra teaches that “[m]obile device 300 may detect multiple different types of gestures. For example, mobile device 300 may detect a first gesture 312 used to navigate between non-password protected desktop screens and may detect a second gesture 314 used to navigate from a non-password-protected desktop screen to a password protected desktop screen.” EX1006, [0024].



EX1006, FIG. 3 (left), FIG. 4 (right).

30. As shown above, a gesture 314 (such as a vertical touch gesture) must be entered to navigate to a password protected desktop screen 450, whereas a different gesture 312 (such as a left-to-right touch gesture) must be entered to navigate between non-password protected desktop screens 310, 410, 420. EX1006, [0027]-[0030].

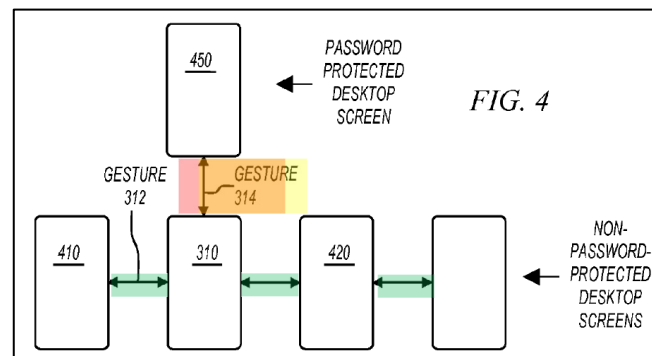
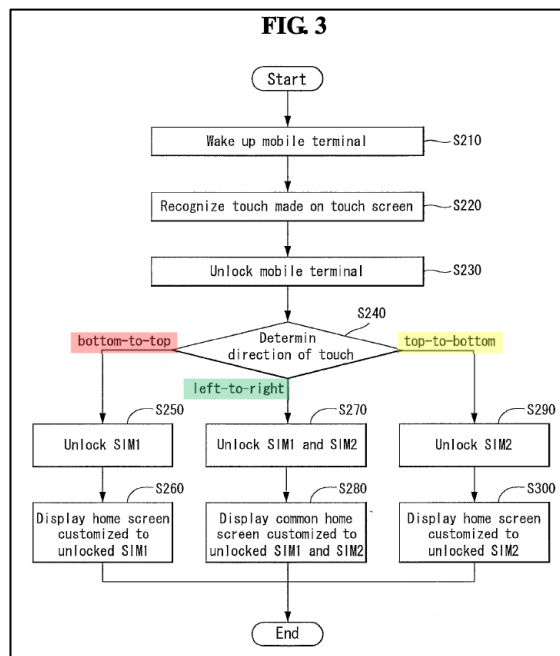
3. A POSITA Would Not Have Combined Chae and Narendra

31. Chae and Narendra are directed to entirely different purposes and implementations. Chae's primary purpose is to provide a method by which a user can navigate to *a desired home screen associated with one or more SIM cards*, and uses gestures as means to retrieve the home screen associated with the desired SIM card(s). EX1005, FIG. 3.

32. *Narendra has nothing to do with navigating screens associated with SIM cards*. Rather, Narendra is focused on how gestures can be used to *navigate between non-password protected desktop screens and password-protected desktop screens*. EX1006, [0024], FIGS. 3, 4. In fact, as acknowledged by the Petitioner, Narendra's mobile device only includes a single SIM card. Petition, 6 ("Narendra specifically discloses a single SIM smartphone"), 63. Accordingly, a POSITA would not have turned to Narendra when using Chae's system at least because Narendra provides no guidance on operating a mobile device user interface that has multiple SIM cards.

33. Indeed, Petitioner's proposed combination not only neglects the primary purpose of Chae, but would also render Chae unsatisfactory for its intended purpose. In particular, by incorporating the teachings Narendra into the teachings of Chae, a user may navigate between password protected desktop screens and non-password protected desktop screens, but would not be able to

navigate between the home screens of two different SIM cards—the primary purpose of Chae. For instance, as shown in Chae and Narendra’s figures below, an upward swipe would lead to a password protected desktop screen in Narendra and a right swipe would lead to a non-password protected desktop screen. But according to Chae’s teachings, an upward swipe would lead to the display of a home screen associated with SIM1 and a right swipe would lead to a customized home screen common to both SIM1 and SIM2. Accordingly, if Narendra’s teachings were incorporated or even substituted into Chae’s system, Chae’s primary purpose of a method of navigating between screens associated with different SIMs would be lost.



EX1005, FIG. 3 (left); EX1006, FIG. 4 (right).

34. Further compounding the problem with the Petitioner's proposed combination is that the petition provides no guidance as to how such different teachings would be resolved in the combined system of Chae and Narendra. For instance, in the combination of Chae and Narendra, would a left to right gesture result in a customized SIM1 and SIM2 home screen being displayed, as shown in Chae's S280 operation in FIG. 3 above, or would it result in a non-password protected desktop screen being displayed, as shown in Narendra's FIG. 4 above? The Petition's omissions and failure to explain how the Chae and Narendra combination would operate fail to establish why a POSITA would have found combining Chae and Narendra obvious. *See e.g.*, Petition, 28-33.

35. To the extent that Narendra is relied upon for additional features such as the implementation of application icons or widgets (Petition, 48-49, 57-58), the Petition provides a few sentences of conclusory statements without any explanation as to why incorporating Narendra's application icons in Chae's system would have had a reasonable expectation of success or would have been predictable.

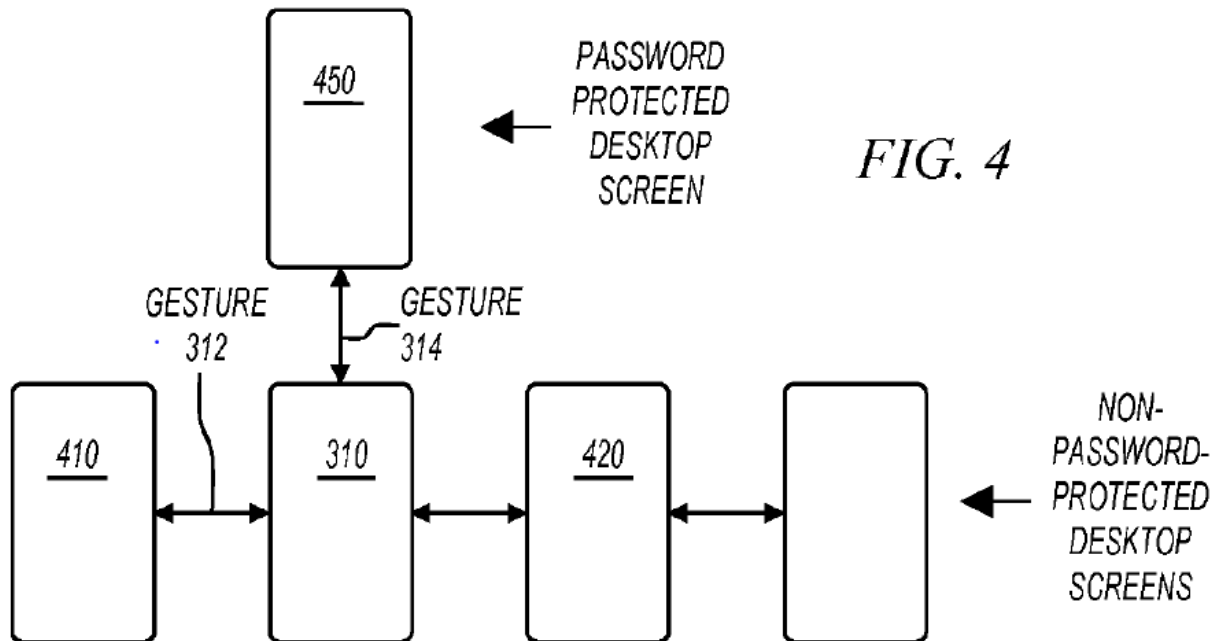
36. For at least the above reasons, the teachings of Chae and Narendra would not have prompted a POSITA to modify Chae in light of Narendra to arrive at the challenged claims.

B. The Petition Fails to Establish Why a POSITA Would Have Combined “any two or more of Chae, Narendra, Android, Shuttleworth, Hong, and Karunamuni”

37. The Petition provides a one (1)-page explanation for why a POSITA would have combined “*any two or more of* Chae, Narendra, Android, Shuttleworth, Hong, and Karunamuni.” Petition, 32-33. However, the Petition does not explain what these various combinations would look like. Indeed, the Petition does not even explain which reference modifies another reference, how and why certain features of a particular reference would have been combined with other features of another reference, or how they would provide the alleged benefits. As an example, there is no explanation as to how an Android, Hong, and Karunamuni combination would be implemented, and, if so, how or why such combination would have been different from a Narendra, Shuttleworth, and Chae combination.

38. One example of Petitioner’s problematic and generic explanation is the combination with Shuttleworth. For instance, the Petition contends that “Shuttleworth discloses using a consistent directional swipe gesture to access the home screen from any other screen” and, in relying on this disclosure, contends that “[u]sing a consistent directional swipe gesture to access the home screen, whether from the wake screen or a widget screen, would have been an obvious substitute for a physical or virtual home button.” Petition, 74, 75. But the Petition

fails to reconcile this teaching with the teachings of the other references. For example, in Narendra, a right touch gesture is made to transition from screen 410 to the screen 310 and a right touch gesture is made to transition from screen 420 to a screen other than screen 310. EX1006, FIG. 4. But if Shuttleworth's teachings were applied, a right touch gesture would always lead to the same screen, which is not consistent with Narendra's teachings. The Petition fails to explain how it would reconcile the divergent teachings of the references.



39. For the various foregoing reasons, the Petition fails to establish why a POSITA would have combined any two or more of Chae, Narendra, Android, Shuttleworth, Hong, and Karunamuni.

C. Independent Claims 1, 9, and 17

1. Limitations 1b, 9b, and 17b

40. Limitation 1b recites a “computer system that is in communication with a display generation component and one or more input devices.” Limitation 9b recites “one or more processors that are in communication with a display generation component and one or more input devices.” Limitation 17b recites “one or more processors of a computer system that is in communication with a display generation component and one or more input devices.”

41. Petitioner fails to address how Chae’s touchscreen is “in communication with” a computer system, and instead just assumes, without explanation, that Chae’s touchscreen is in communication with a computer system. *See* Petition, 34-35. For this reason, Petitioner has failed to show that Chae alone or any combination of Chae, Narendra, Hong, and Android renders obvious limitations 1b, 9b, and 17b.

2. Limitations 1c, 9c, and 17c

42. Limitations 1c, 9c, and 17c each recites “the computer system is in a power saving state.” The Petition does not cite any disclosure in either Chae or Android that describes a power saving state or the operations of a mobile terminal when in a power saving state. *See* Petition, 36-39. The Petition does not address that Chae’s mobile terminal includes wireless communication unit 110, an audio/video (A/V) input unit 120, a user input unit 130, a sensing unit 140, an

output unit 150, a memory 160, interface unit 170, a controller 180, and power supply unit 190, any of which could be consuming power while the display is turned off. EX1005, [0044]-[0062]. The Petition does not point to any disclosure in Chae that indicates the power consumption of other components in Chae's mobile terminal while the display was off. *See* Petition, 36-39. The Petition also points to no disclosure in Android that indicates the power consumption of other components of the mobile terminal while the display was off. *Id.*

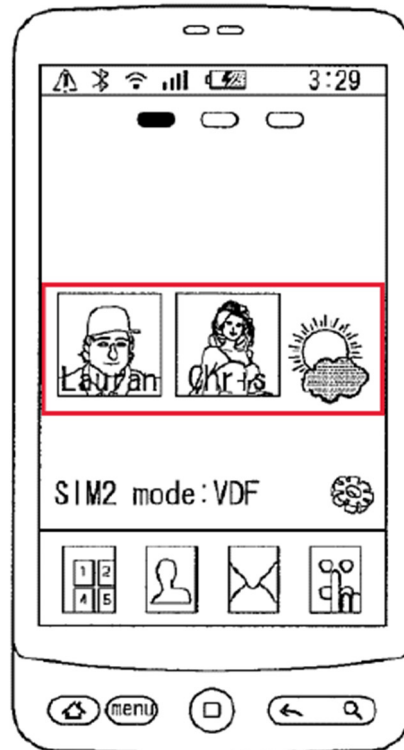
43. For these reasons, Petitioner has failed to show that Chae alone or any combination of Chae, Narendra, Hong, and Android renders obvious limitations 1c, 9c, and 17c.

3. Limitations 1g, 9g, and 17g

44. Limitations 1g, 9g, and 17g each recites “a respective user interface object... contains application content” and “when selected, causes display of an application.”

45. Petitioner fails to show that Chae discloses that “a respective user interface object of the plurality of user interface objects contains application content from an application corresponding to the respective user interface object, and when selected, causes display of an application corresponding to the respective user interface object.” Petitioner argues that a “POSITA would have understood that two or more of the objects on the Figure 6(b) screen... each ‘contains

application content from an application corresponding to the respective user interface object” and provides the following annotated figure. Petition, 52-53.



(b)

46. However, nothing in Chae indicates that the icons displayed in Figure 6(b) are dynamic or change in any way in response to content in the corresponding applications, and that the icons when selected causes display of the corresponding applications. Petitioner argues, for example, that “the right-most object includes a graphical depiction of weather conditions” and selecting it would cause display of a corresponding application. Petition, 53, 55. However, nothing in Chae suggests that the right-most object is anything other than a generic graphical object, and nothing in Chae states that selecting that graphical object would display a

corresponding application. In fact, the only widgets that are described in Chae are widgets relating to the use state of the multiple SIM cards. EX1005, [0152] (“widgets that show use-state information of the first and second SIMs (SIM1 and SIM2).”). These widgets described in Chae do not correspond to applications and thus do not cause display of applications when the widgets are selected.

47. Chae in combination with Narendra, Hong, and/or Android is similarly deficient. Narendra mentions the word “widgets” only once with no other details suggesting that widgets correspond to applications, contain application content, and cause display of applications. EX1006, [0025]. Hong’s widget provides a preview of a selected application without executing the selected application, but Hong does not teach or suggest displaying the application when the widget is selected as required by limitation 1g. EX1010, [0004]-[0005], [0009]-[0011], [0050], [0066]-[0068], [0071]-[0077], [0082]-[0092]. Android also provides no indication that the application is displayed when the widget is selected, rather than providing a preview of the selection within the widget without executing the application as similarly described in Hong. *See* EX1007.

48. Petitioner alleges that “[o]ne well-known functionality of widgets was displaying ‘an application corresponding to the respective user interface object’ upon selecting a widget.” Petition, 55. But, as explained above, none of the

references relied upon by Petitioner discloses this alleged “well-known functionality of widgets.”

49. For these reasons, none of the cited references teaches or suggests “a respective user interface object... contains application content” and “when selected, causes display of an application.” Based on my knowledge and experience in this field and my review of the references cited for claims 1, 9, and 17, the references and the proposed combinations do not provide this requirement of claims 1, 9, and 17.

D. Claims 4-6, 12-14, and 20-22

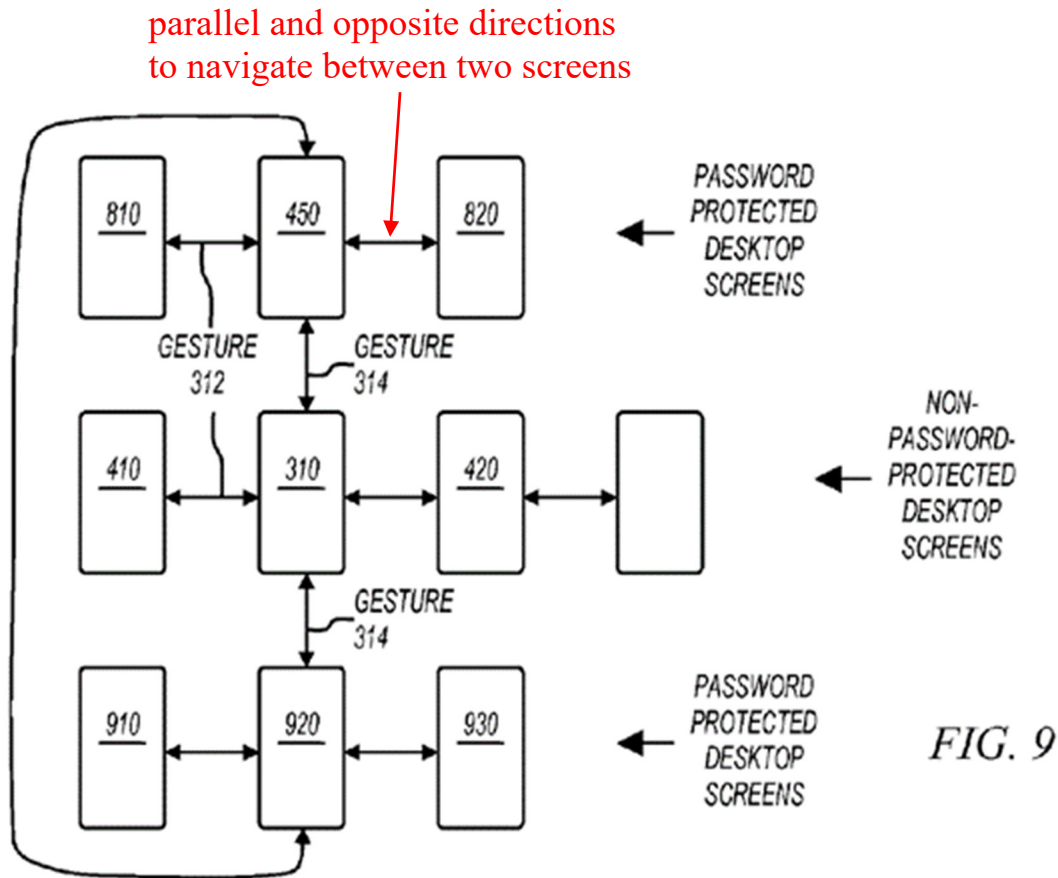
50. Petitioner asserts that a “POSITA would have understood that choosing a particular navigational path for moving among the user-interface screens and associating a particular directional swipe gesture with each movement is a simple matter of choosing from a finite number of design choices.” Petition, 66. Although the universe of possible swipe directions may be limited, the combinations of these directions and the various possible user interface screens is vast. The particular navigational paths recited in claims 4-6, 12-14, and 20-22 would not have been obvious to a POSITA in view of Chae and Narendra.

51. Specifically, Chae already contemplates that swipes left, right, up, and down have pre-assigned actions to facilitate navigation between the multiple user profiles related to the different SIM cards. EX1005, [0103]-[0104] (“At step S250,

the controller 180 unlocks the first SIM (SIM1) when the directivity of the line is from *bottom-to-top*.”), [0108]-[0109] (“When the user draws a line in a *top-to-bottom* direction, the controller 180 unlocks the second SIM (SIM2) at step S290 and displays a home screen customized to the second SIM (SIM2) on the touch screen at step S300.”), [0110]-[0111] (“When a user draws a line in a *left-to-right* direction on a touch screen, the controller 180 unlocks both of the first and second SIMs (SIM1 and SIM2) at step S270, and displays a home screen including common items of the first and second SIMs (SIM1 and SIM2) on the touch screen at step S280.”), [0148] (“when a user draws a line on the touch screen in a *right-to-left* direction, the controller 180 unlocks the first SIM (SIM1). When a user draws a line on the touch screen in a *left-to-right* direction, the controller 180 unlocks the second SIM (SIM2).”), FIGS. 3-4, 6-7, 19. Any new swipe in a cardinal direction added to Chae would already be in a direction that has a pre-assigned action. In fact, with the numerous swipe gestures identified in Chae because of its design to make multiple SIM cards accessible on the same device, a POSITA would have understood that adding more swipe gestures for additional actions would have made the device in Chae less user friendly, not least because it would have required the user to determine when certain motions cause different actions.

52. Narendra also does not teach or suggest returning to a previous screen using a swipe direction that is not substantially parallel and opposite, e.g.,

perpendicular as illustrated in the Petition, to the direction for navigating from the previous screen to the current screen. Rather, Narendra shows navigating between two screens using parallel and opposite directions, which Petitioner and Rosenberg admits. EX1006, [0027] (“a user may navigate between desktop screens that are logically oriented side-by-side by using a swipe gesture from left-to-right or from right-to-left such as gesture 312.”), FIG. 9; Petition, 88-89; EX1003, ¶¶150-151.



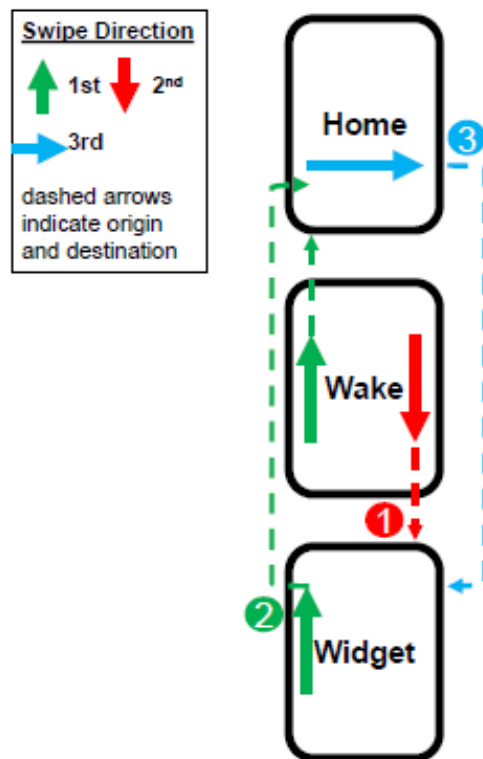
EX1006, FIG. 9

1. Claims 4, 12, and 20

53. Claims 4, 12, and 20 each recites “while the home screen user interface is displayed..., detecting a third input that... includes third movement... in a third direction that is different from the first direction and the second direction” and “redisplaying the widget screen user interface.” The particular navigational path recited in claims 4, 12, and 20 would not have been obvious to a POSITA in view of Chae and Narendra because neither Chae nor Narendra

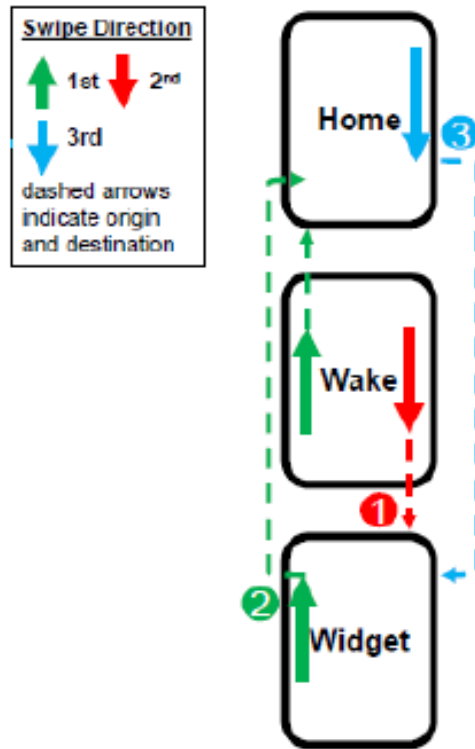
disclose such a navigational path for returning to the widget screen from the home screen.

54. Petitioner provides a graphical representation of the navigational path of claims 4, 12, and 20, showing a third direction that is perpendicular to the first and second directions, as follows:



Petition, 77.

55. However, the combination of Chae and Narendra would not result in “a third direction that is different from the first direction and the second direction.” Rather, the third direction would be the same as the second direction in view of Narendra’s teachings of parallel and opposite directions for navigating between two screens, as shown below.



56. Further, Petitioner argues that a “POSITA would have understood that such a navigational system is easy to learn and use” and “[p]roviding a familiar user experience for quickly, efficiently, and easily accessing multiple screens would have motivated a POSITA to configure Chae or Narendra to allow a user to navigate to the widget screen from the wake screen by swiping in one direction but to navigate to the widget screen from the home screen by swiping in a different direction.” Petition, 79. This argument does not show that it would have been obvious to a POSITA to use a swipe direction that is different than the first direction and the second direction, e.g., perpendicular to the direction for navigating from the widget screen to the home screen, as the Petition illustrates. A POSITA would have understood it to be much more user friendly to navigate

between two screens using parallel and opposite directions, as shown by Narendra (EX1006, [0027], FIG. 9), than to confuse a user with a different perpendicular direction for returning to the widget screen. Petitioner and Dr. Rosenberg agree. Petition, 88-89; EX1003, ¶150 (“It would have been intuitive to a POSITA (and to smartphone users generally) that, if swiping in one direction results in moving from an origin screen to a destination screen, then swiping in the opposite direction should result in moving from the destination screen back to the origin screen. Indeed, the traditional navigational path illustrated by prior-art Figure 2 of Narendra behaves in this intuitive manner.”), ¶151 (“to enhance ease of use and comport with the intuitive notion described above, a POSITA would have been motivated to allow the user to return to the wake screen from the control panel by swiping in the opposite direction from that used to navigate from the wake screen to the control panel.”). Likewise, a POSITA would have also understood it to be much more user friendly to provide access to the widget screen using a consistent directional swipe gesture, as disclosed by Shuttleworth (EX1008, [0353]), than to confuse a user with a different direction for returning to the widget screen. Dr. Rosenberg likewise agrees. EX1003, ¶130 (“Consistent with Shuttleworth’s teaching, a POSITA would have understood that providing the user a consistent mechanism to access the home screen, regardless of which screen the user is currently viewing, was a well-known and accepted user-interface design practice

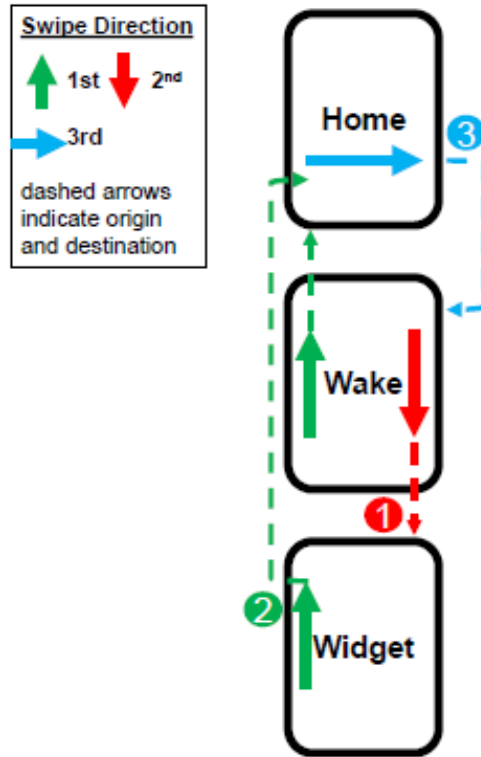
for enhancing the efficiency and ease of use of the user interface.” “A POSITA would have understood that using a consistent directional swipe gesture to access the home screen enhances ease of use, efficiency, and convenience by allowing the user to learn a single gesture for accessing the home screen.”).

57. For these reasons, none of the cited references teaches or suggests “while the home screen user interface is displayed..., detecting a third input that... includes third movement... in a third direction that is different from the first direction and the second direction” and “redisplaying the widget screen user interface.” Based on my knowledge and experience in this field and my review of the references cited for claims 4, 12, and 20, the references and the proposed combinations do not provide this requirement of claims 4, 12, and 20.

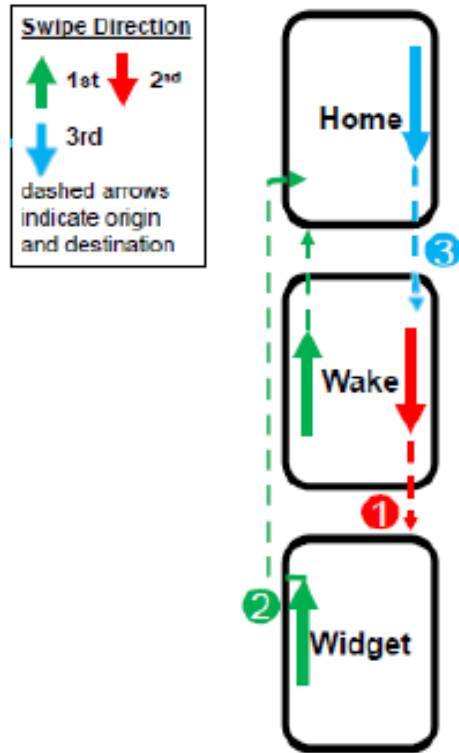
2. Claims 5, 13, and 21

58. Claims 5, 13, and 21 each recites “while the home screen user interface is displayed... detecting a fourth input that... includes fourth movement... in a third direction that is different from the first direction and the second direction” and “redisplaying the wake screen user interface.” The particular navigational path recited in claims 5, 13, and 21 would not have been obvious to a POSITA in view of Chae and Narendra because neither Chae nor Narendra disclose such a navigational path for returning to the wake screen from the home screen.

59. Petitioner provides a graphical representation of the navigational path of claims 5, 13, and 21 as follows:



Petition, 81. The combination of Chae and Narendra would not result in “a third direction that is different from the first direction and the second direction.” Rather, the third direction would be the same as the second direction in view of Narendra’s teachings of parallel and opposite directions for navigating between two screens, as shown below.



60. Further, Petitioner argues that “[i]t would have been obvious to allow the user to return to the wake screen to lock the smartphone.” Petition, 69. This argument does not show that it would have been obvious to a POSITA to include a swipe gesture to return to the wake screen. A POSITA would have understood that a device can be locked or a wake screen can be reached by pressing a button on the device, as shown in Android. *See* EX1007; Petition, 37-38; EX1003, ¶77. A POSITA would have understood it to be much more user friendly to simply include a button to return to a wake screen or lock the device in Chae than to confuse a user with a different direction for returning to the wake screen.

61. Further, a POSITA would have understood it to be much more user friendly to navigate between two screens using parallel and opposite directions, as

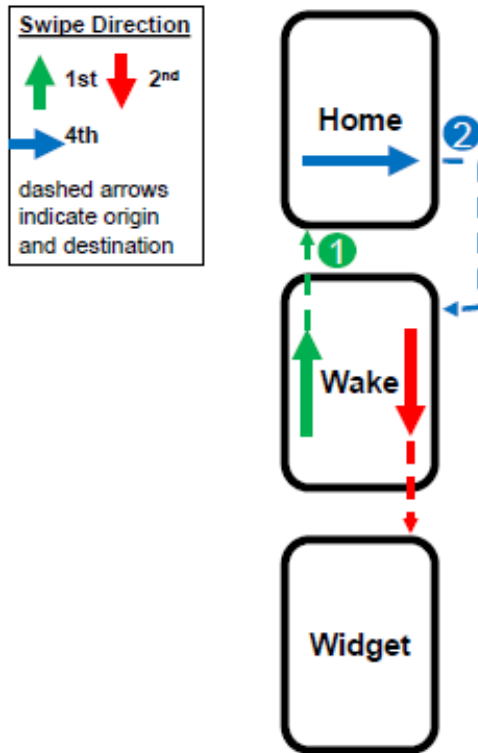
shown by Narendra (EX1006, [0027], FIG. 9), than to confuse a user with a different direction for returning to the wake screen. Petitioner and Dr. Rosenberg agree. Petition, 88-89; EX1003, ¶150 (“It would have been intuitive to a POSITA (and to smartphone users generally) that, if swiping in one direction results in moving from an origin screen to a destination screen, then swiping in the opposite direction should result in moving from the destination screen back to the origin screen. Indeed, the traditional navigational path illustrated by prior-art Figure 2 of Narendra behaves in this intuitive manner.”), ¶151 (“to enhance ease of use and comport with the intuitive notion described above, a POSITA would have been motivated to allow the user to return to the wake screen from the control panel by swiping in the opposite direction from that used to navigate from the wake screen to the control panel.”).

62. For these reasons, none of the cited references teaches or suggests “while the home screen user interface is displayed... detecting a fourth input that... includes fourth movement... in a third direction that is different from the first direction and the second direction” and “redisplaying the wake screen user interface.” Based on my knowledge and experience in this field and my review of the references cited for claims 5, 13, and 21, the references and the proposed combinations do not provide this requirement of claims 5, 13, and 21.

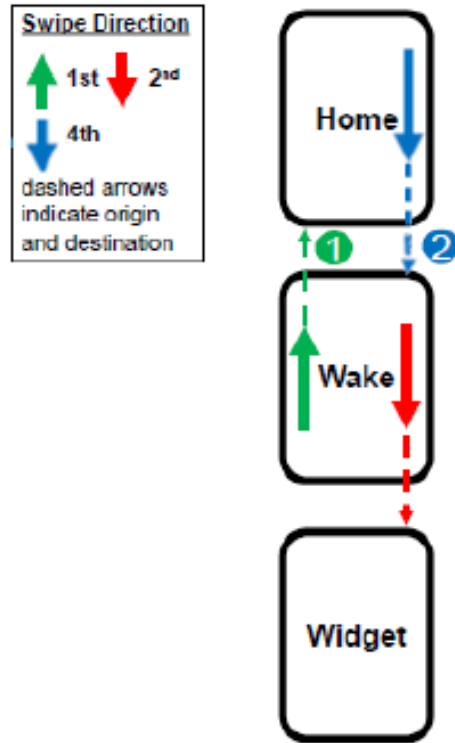
3. Claims 6, 14, and 22

63. Claims 6, 14, and 22 each recites “while the home screen user interface is displayed..., detecting a fifth input that... includes fifth movement... in a fourth direction that is different from the first direction and the second direction” and “redisplaying the wake screen user interface.” The particular navigational path recited in claims 6, 14, and 22 would not have been obvious to a POSITA in view of Chae and Narendra because neither Chae nor Narendra disclose such a navigational path for returning to the wake screen from the home screen.

64. Petitioner provides a graphical representation of the navigational path of claim 6 as follows:



Petition, 68. The combination of Chae and Narendra would not result in “the fifth movement to be in a fourth direction that is different from the first direction and the second direction.” Rather, the fourth direction would be the same as the second direction in view of Narendra’s teachings of parallel and opposite directions for navigating between two screens, as shown below.



65. Further, Petitioner argues that “[i]t would have been obvious to allow the user to return to the wake screen to lock the smartphone.” Petition, 69. This argument does not show that it would have been obvious to a POSITA to include a swipe gesture to return to the wake screen. A POSITA would have understood that a user can lock the device or return to the wake screen by pressing a button on the device, as shown in Android. *See* EX1007; Petition, 37-38; EX1003, ¶77. A POSITA would have understood it to be much more user friendly to simply include a button to return to a wake screen or lock the device in Chae than to confuse a user with a different direction for returning to the wake screen.

66. Further, a POSITA would have understood it to be much more user friendly to navigate between two screens using parallel and opposite directions, as

shown by Narendra (EX1006, [0027], FIG. 9), than to confuse a user with a different direction for returning to the wake screen. Petitioner and Dr. Rosenberg agree. Petition, 88-89; EX1003, ¶150 (“It would have been intuitive to a POSITA (and to smartphone users generally) that, if swiping in one direction results in moving from an origin screen to a destination screen, then swiping in the opposite direction should result in moving from the destination screen back to the origin screen. Indeed, the traditional navigational path illustrated by prior-art Figure 2 of Narendra behaves in this intuitive manner.”), ¶151 (“to enhance ease of use and comport with the intuitive notion described above, a POSITA would have been motivated to allow the user to return to the wake screen from the control panel by swiping in the opposite direction from that used to navigate from the wake screen to the control panel.”).

67. For these reasons, none of the cited references teaches or suggests “while the home screen user interface is displayed..., detecting a fifth input that... includes fifth movement... in a fourth direction that is different from the first direction and the second direction” and “redisplaying the wake screen user interface.” Based on my knowledge and experience in this field and my review of the references cited for claims 6, 14, and 22, the references and the proposed combinations do not provide this requirement of claims 6, 14, and 22.

E. All dependent claims

68. The dependent claims each depend on one of claims 1, 9, or 17. For the reasons discussed above with respect to claims 1, 9, and 17, Petitioner has not met its burden to show that the cited references render obvious the dependent claims.

V. LEGAL STANDARDS

A. Terminology

69. I have been informed by Counsel and understand that the best indicator of claim meaning is its usage in the context of the patent specification as understood by one of ordinary skill. I further understand that the words of the claims should be given their plain meaning unless that meaning is inconsistent with the patent specification or the patent's history of examination before the Patent Office. Counsel has also informed me, and I understand that, the words of the claims should be interpreted as they would have been interpreted by one of ordinary skill at the time of the invention was made (not today). Because I do not know at what date the invention as claimed was made, I have used the earliest possible priority date of the '352 Patent as the point in time for claim interpretation purposes (the Critical Date).

B. Legal Standards for Anticipation

70. I have been informed by Counsel and understand that documents and materials that qualify as prior art can render a patent claim unpatentable as

anticipated. I am informed by Counsel and understand that all prior art references are to be looked at from the viewpoint of a person of ordinary skill in the art.

71. I am informed by Counsel and understand that a challenged claim is unpatentable as “anticipated” under 35 U.S.C. § 102 if it is determined that all the limitations of the claim are described in a single prior art reference. I am informed by Counsel and understand that, to anticipate a claim, a prior art reference must disclose, either expressly or inherently, each and every limitation of that claim and enable one of ordinary skill in the art to make and use the invention.

72. I have been informed by Counsel and understand that in an *inter partes* review, “the petitioner shall have the burden of proving a proposition of unpatentability,” including a proposition of anticipation, “by a preponderance of the evidence.” 35 U.S.C. §316(e).

C. Legal Standards for Obviousness

73. I have been informed by Counsel and understand that documents and materials that qualify as prior art can render a patent claim unpatentable as obvious. I am informed by Counsel and understand that all prior art references are to be looked at from the viewpoint of a person of ordinary skill in the art at the time of the invention, and that this viewpoint prevents one from using his or her own insight or hindsight in deciding whether a claim is obvious.

74. I have been informed by Counsel and understand that a claim is unpatentable for obviousness under 35 U.S.C. § 103 “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” I am informed by Counsel and understand that obviousness may be based upon a combination of references. I am informed by Counsel and understand that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. However, I am informed by Counsel and understand that a patent claim composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.

75. I am informed by Counsel and understand that when a patented invention is a combination of known elements, a court must determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue by considering the teachings of prior art references, the effects of demands known to people working in the field or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art.

76. I am informed by Counsel and understand that a patent claim composed of several limitations is not proved obvious merely by demonstrating that each of its limitations was independently known in the prior art. I am informed by Counsel and understand that identifying a reason those elements would be combined can be important because inventions in many instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known. I am informed by Counsel and understand that it is improper to use hindsight in an obviousness analysis, and that a patent's claims should not be used as a "roadmap."

77. I am informed by Counsel and understand that an obviousness inquiry requires consideration of the following factors: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) any objective indicia of non-obviousness, such as commercial success, long-felt but unresolved need, failure of others, industry recognition, copying, and unexpected results.

78. I have been informed by Counsel and understand that an obviousness evaluation can be based on a combination of multiple prior art references. I understand that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but that the nexus linking two or more prior art references is sometimes simple common sense. I have been informed by Counsel

and understand that obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that a motivation to combine references may be supplied by the direction of the marketplace.

79. I have been informed by Counsel and understand that if a technique has been used to improve one device, and a person of ordinary skill at the time of invention would have recognized that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

80. I have been informed by Counsel and understand that practical and common sense considerations should guide a proper obviousness analysis, because familiar items may have obvious uses beyond their primary purposes. I have been informed by Counsel and understand that a person of ordinary skill looking to overcome a problem will often be able to fit together the teachings of multiple prior art references. I have been informed by Counsel and understand that obviousness analysis therefore takes into account the inferences and creative steps that a person of ordinary skill would have employed at the time of invention.

81. I have been informed by Counsel and understand that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill at the time of invention, not just the patentee. Accordingly, I understand that any need or problem known in the field of endeavor at the time of

invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

82. I have been informed by Counsel and understand that a claim can be obvious in light of a single reference, without the need to combine references, if the elements of the claim that are not found explicitly or inherently in the reference can be supplied by the common sense of one of skill in the art.

83. I have been informed by Counsel and understand that secondary indicia of non-obviousness may include (1) a long felt but unmet need in the prior art that was satisfied by the invention of the patent; (2) commercial success of processes covered by the patent; (3) unexpected results achieved by the invention; (4) praise of the invention by others skilled in the art; (5) taking of licenses under the patent by others; (6) deliberate copying of the invention; (7) failure of others to find a solution to the long felt need; and (8) skepticism by experts. I understand that evidence of secondary indicia of non-obviousness, if available, should be considered as part of the obviousness analysis.

84. I have been informed by Counsel and understand that there must be a relationship between any such secondary considerations and the invention, and that contemporaneous and independent invention by others is a secondary consideration supporting an obviousness determination.

85. In sum, my understanding is that prior art teachings are properly combined where one of ordinary skill having the understanding and knowledge reflected in the prior art and motivated by the general problem facing the inventor, would have been led to make the combination of elements recited in the claims. Under this analysis, the prior art references themselves, or any need or problem known in the field of endeavor at the time of the invention, can provide a reason for combining the elements of multiple prior art references in the claimed manner.

86. I have been informed by Counsel and understand that in an *inter partes* review, “the petitioner shall have the burden of proving a proposition of unpatentability,” including a proposition of obviousness, “by a preponderance of the evidence.” 35 U.S.C. §316(e).

VI. CONCLUSION

87. I currently hold the opinions set expressed in this declaration. But my analysis may continue, and I may acquire additional information and/or attain supplemental insights that may result in added observations.

88. I hereby declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code.

Dated: 16th December, 2023

By: 

Andrew Cockburn

APPENDIX A

Andy Cockburn

B.Sc.(Hons) Ph.D.

Curriculum Vitae

Full legal name	Andrew Jeremy Gavin Cockburn
University Address	Department of Computer Science and Software Engineering University of Canterbury Christchurch 8140 New Zealand
Telephone	+64 3 369 2119
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URL	http://www.csse.canterbury.ac.nz/~andy
Consultancy Address	Cockburn Human Interface Consulting Ltd. 20 Gilmour Terrace, Lyttelton 8082 New Zealand
Telephone	+64 21 296 2307
Email	ajc168@snap.net.nz
Date of birth	23rd July 1966
Date	November 14, 2023

Brief Summary

International research reputation

- Over one hundred and ninety publications in international journals and conferences.
- Elected to the CHI Academy (2015), which is an honorary group of individuals who have made substantial contributions to the field of human-computer interaction.
- Recipient of the 2009 Chris Wallace award for the outstanding research contribution to Computer Science (2005-2007) in Australasia.
- Deputy Chair of the national panel for assessing Computer Science and Mathematics research quality (MIST PBRF panel, 2016-2019).
- Technical programme committee chair for ACM CHI 2020; Papers co-chair for ACM CHI 2014 and 2015.
- Editorial Board Member for: ACM Transactions on Computer-Human Interaction (2012-2021); Human-Computer Interaction Journal (2015-); Foundations and Trends in HCI (2015-2023); International Journal of Human-Computer Studies (2004-2013); Interacting with Computers (2003-2013).
- Best paper awards at CHI 2018, 2013, 2012, 2011 (awarded to the top 1% of submissions) and 13 Honourable Mention awards (top 5%) at ACM CHI.
- H-index impact factor of 56 (Google Scholar).

Excellent educator and public speaker

- Long track record of outstanding student evaluations.
- Nominated for the New Zealand National Tertiary Teaching Award, 2010. Recipient of a University of Canterbury Teaching Award (2004) and many nominations for student-elected 'lecturer of the year' award.

Experienced expert witness and consultant

- Testifying expert witness on behalf of industry leaders in various jurisdictions, including the Federal Court of Australia, US Federal Court, US Patent Trials and Appeals Board, and the US International Trade Commission.

Education

Degree	PhD (June 1993)
Discipline	Computer Science — Computer Supported Cooperative Work
Location	University of Stirling, Scotland
Thesis Title	Groupware Design: Principles, Prototypes, and Systems

Degree	BSc(Hons) (July 1988)
Discipline	Computer Science
Location	University of York, England

Employment History

Position	Professor (promoted through lecturer, senior lecturer, associate professor)
Location	University of Canterbury Christchurch New Zealand
Period	June 1993 — current

Research Student Supervision

PhD candidates

Stewart Dowding	2021–	Interaction Pace and User Preferences
Pang Suwanaposee	2020–	Cognitive Biases and the Subjective Experience of Interaction
Sarmad Soomro	2017–2021	Interaction with In-Vehicle Touchscreens
Joshua Leung	2013–2017	Understanding the Noticeability and Distraction of Interactive Highlighting Techniques
Philip Quinn	2012–2016	Economic Behaviour & Psychological Biases in Human-Computer Interaction
Tham Piumsomboon	2011–2015	Adaptive and Multimodal Interfaces for Collaborative Augmented Reality
Joey Scarr	2011–2014	Improving Interaction with Spatial User Interfaces
Stephen Fitchett	2010–2013	Understanding and Improving Personal File Retrieval
Susanne Tak	2008–2011	Improving Interfaces for Window/Task Switching
Jason Alexander	2006–2009	Improving Interfaces for Document Navigation
Joerg Hauber	2004–2008	Understanding Remote Collaboration in Video Collaborative Virtual Environments
Julian Looser	2003–2007	AR Magic Lenses: Addressing the Challenge of Focus and Context in Augmented Reality
Volkert Buchmann (A. sup.)	2004–2008	Haptic Feedback in Augmented Reality
Carl Cook (A. sup.)	2002–2006	Collaborative Software Engineering
Tim Wright	2000–2004	Collaborative and Multiple-Notation Programming Environments for Children
Michael JasonSmith	2000–2006	User Interfaces for Temporal Awareness

M.Sc. candidates

Ben McDonald	2010–2011	Multuser interaction with large public displays
Dominic Winkler	2009–2011	Interaction Techniques for Cross Context Activities
Taher Amer	2005–2006	Evaluating SwiftPoint
Trond Nilsen	2004–2006	Hybrid Interfaces in Augmented Reality
Joshua Savage	2003–2004	The Calibration and Evaluation of Speed-Dependent Automatic Zooming Interfaces
Ben Schmidt	2001–2002	A Study of Bimanual Interaction
Elizabeth Ng (A. sup.)	1997–1998	Pen-based music input
Aaron Tay	1994–5	End-User Tailorability in Workflow Design

Honours candidates and Honours-level interns

Joel Harrison	2012	Improving Command Selection
Joshua Leung	2012	Improving File Access
Jerome Delamarche	2010	Multiple Trajectory Pointing Methods
Joey Scarr	2010	Improving Expertise Development in User Interfaces
Stephen Fitchett	2009	Improved Mobile Scrolling Interfaces
Philip Quinn	2007	Improving Command Interfaces
Keith Humm	2007	Improving Interfaces for Task Switching
Jason Alexander	2005	Improving Document Navigation with Space-Filling Thumbnails
Philip Brock	2005	An Investigation of Target Acquisition with Visually Expanding Targets in Constant Motor-Space
David Mitchell	2003	Evaluating Focus+Context Screens
Andrew Wallace	2003	Calibrating Speed-Dependent Automatic Zooming
Andrew Barrett	2002	Implementing RSVP as an Image Browser
Julian Looser	2002	3D Games as Motivation in Fitts' Law Experiments
Joshua Savage	2002	Implementing and Evaluating Speed-Coupled Scrolling
Amal Siresena	2002	Mobile Text Entry
Michael Moyle	2001	An Evaluation of Simple Gesture Based Controls
Lee Butts	2001	Mobile Phone Text Entry
Eddie Edwards	2001	Towards Scalable Interfaces Using Spatial Cues
Gene Thomas	1997	Smart Desktop
Olof Eilert	1997	User Interfaces for Object Oriented Literate Programming
Philip Weir	1996	Distortion Oriented Workspace Awareness
Carey Evans	1996	Assisting World Wide Web Navigation
Justin Macfarlane	1995	Mawd: A Collaborative Analysis Tool
Carl Cerecke	1995	TRAIL: An Email Based CSCW Toolkit
Andrew Bryant	1995	Leogo: An Equal Opportunity Programming Environment
Ian Bosely	1994	SPI: A Social Presence Indicator

Postgraduate Thesis Examinations

Katherine Fennedy	PhD	External Examiner	Singapore University of Tech. & Design	2021
Praveenkumar Kanithi	PhD	Chair	University of Canterbury	2020
Ori Gagoni	PhD	Chair	University of Canterbury	2019
Alaeddin Nassani	PhD	Chair	University of Canterbury	2019
Veera Mandalika	PhD	Chair	University of Canterbury	2018
Jessalyn Alvina	PhD	Examiner	Université Paris Sud	2017
Hyungon Kim	PhD	Chair	University of Canterbury	2017
Thomas Young	PhD	Chair	University of Canterbury	2017
Craig Sutherland	PhD	Examiner	University of Auckland	2016
David Thompson	PhD	Chair	University of Canterbury	2016
Philip Quinn	PhD	Supervisor	University of Canterbury	2016
Daniel Bradley	PhD	Examiner	University of Queensland	2016
David Altimera	PhD	Chair	University of Canterbury	2015
Jakub Zlotowsky	PhD	Chair	University of Canterbury	2015
Thammathip Piumsomboon	PhD	Supervisor	University of Canterbury	2015
Robert Schattschnieder	PhD	Chair	University of Canterbury	2014
Hazel Bradshaw	PhD	Chair	University of Canterbury	2014
Amur Al Manji	PhD	Examiner	University of Auckland	2014
Amir Shareghi Najar	PhD	Chair	University of Canterbury	2014
Joey Scarr	PhD	Supervisor	University of Canterbury	2014
Stephen Fitchett	PhD	Supervisor	University of Canterbury	2014
Amali Weeseringhe	PhD	Chair	University of Canterbury	2012
Sayan Ray	PhD	Chair	University of Canterbury	2012
Christina Dicke	PhD	Chair	University of Canterbury	2012
Minkyung Lee	PhD	Chair	University of Canterbury	2010
Jason Alexander	PhD	Supervisor	University of Canterbury	2009
Leah Findlater	PhD	Examiner	University of British Columbia	2009
Judy Bowen	PhD	Examiner	University of Waikato	2008
Joerg Hauber	PhD	Supervisor	University of Canterbury	2008
Julian Looser	PhD	Supervisor	University of Canterbury	2008
Michael JasonSmith	PhD	Supervisor	University of Canterbury	2006
Tim Wright	PhD	Supervisor	University of Canterbury	2005
Beryl Plimmer	PhD	Examiner	University of Waikato	2003
Gorden Paynter	PhD	Examiner	University of Waikato	2000
Gitesh K Raikundalia	PhD	Examiner	Bond University	1997
Ramon Craig Standing	PhD	Examiner	University of Western Australia	1997
Ying Leung	PhD	Examiner	Massey University	1995
Qi Min Ser	Masters	Examiner	University of Canterbury	2016
Taher Amer	Masters	Supervisor	University of Canterbury	2006
Trond Nilsen	Masters	Supervisor	University of Canterbury	2006
Akhil Mehra	Masters	Examiner	University of Auckland	2005
Aparna Krishnan	Masters	Examiner	University of Waikato	2003
Shaun Kaasten	Masters	Examiner	University of Calgary	2001
Boyd Ludlow	Masters	Examiner	University of Waikato	1999
Donald Cox	Masters	Examiner	University of Calgary	1998
Wallace Chigona	Masters	Examiner	Waikato University	1997
Simon Gianoutsos	Masters	Examiner	Waikato University	1997
Jing Deng	Masters	Examiner	Waikato University	1996 and 1997
Aaron Tay	Masters	Examiner	University of Canterbury	1996

Student glory

Pang Suwanaposee	PhD	2022	Google PhD Fellowship Award AUD\$15,000.
Pang Suwanaposee	PhD	2021	CHI Honourable Mention award.
Joey Scarr	PhD	2016	John Makepeace Bennett Award for the Distinguished Computer Science PhD thesis in Australasia.
Philip Quinn	PhD	2015	US Patent Awarded (Google Assignee).
Philip Quinn	PhD	2014	US Patent Awarded (Google Assignee).
Stephen Fitchett	PhD	2014	CHI Honourable Mention award.
Philip Quinn	PhD	2013	Google Mountain View Internship.
Stephen Fitchett	PhD	2013	CHI Best Paper award.
Joey Scarr	PhD	2013	CHI Honourable Mention award.
Joey Scarr	PhD	2013	CHI ReplicCHI award.
Joey Scarr	PhD	2012	CHI Best Paper award.
Stephen Fitchett	PhD	2012	CHI Honourable Mention award.
Philip Quinn	PhD	2012	Google Mountainview Internship.
Joey Scarr	PhD	2012	Google Sydney Internship.
Stephen Fitchett	PhD	2011	Outstanding reference from Darren Edge, Microsoft Research Asia.
Joey Scarr	PhD	2012	\$3K for 2nd place in University 'PhD in 3' competition.
Joey Scarr	PhD	2012	\$1K for 1st place in College 'PhD in 3' competition.
Stephen Fitchett	PhD	2012	\$1K for 3rd place in College 'PhD in 3' competition.
Philip Quinn	PhD	2011	Honourable Mention award ACM CHI'11.
Joey Scarr	PhD	2011	Google Sydney Internship.
Susanne Tak	PhD	2010	\$5K Google Anita Borg Scholarship
Susanne Tak	PhD	2010	\$3K from ACM for participation at CHI's Doctoral Consortium
Jason Alexander	PhD	2010	PhD Thesis placed on "Dean's list for excellence" (top 10%)
Susanne Tak	PhD	2009	\$2K award for 1st place in College Research Poster competition
Jason Alexander	PhD	2008	\$1K award for 2nd place in College Research Poster competition
Jason Alexander	PhD	2008	Michael Sweeney award for best student paper, Graphics Interface '08.
Mark Hancock	PhD	2007	Best paper nomination at ACM CHI'07.
Josh Savage and Andrew Wallace	M.Sc. Hons	2005	Best paper nomination at ACM CHI'05.
Mike Moyle	Hons	2005	NZ Hi-Tech Young Achiever of the Year Award

Publications

Edited Volumes

- EV1 J McGrenere and A Cockburn (Eds.) Proceedings of ACM CHI 2020 Conference on Human Factors in Computing Systems.
- EV2 J McGrenere and A Cockburn (Eds.) Extended Abstracts of ACM CHI 2020 Conference on Human Factors in Computing Systems.
- EV3 M Billinghamurst and A Cockburn (Eds.) Proceedings of the Sixth Australasian User Interface Conference (AUI2005). Volume 40 of the Conferences in Research and Practice in Information Technology, Australian Computer Society.
- EV4 A Cockburn (Ed.) Proceedings of the Fifth Australasian User Interface Conference (AUI2004). Volume 28 of the Conferences in Research and Practice in Information Technology, Australian Computer Society.

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- J2 J Leung and A Cockburn. Design Framework for Interactive Highlighting Techniques. *Foundations and Trends in Human-Computer Interaction*. 14(2-3):96-271. 2021.
- J3 AF Mairena, C Gutwin, and A Cockburn. Which Emphasis Technique to Use? Perception of Emphasis Techniques with Varying Distractors, Backgrounds, and Visualization Types. *Information Visualization*. September. 2021.
- J4 A Cockburn, P Dragicevic, L Besançon and C Gutwin. Threats of a Replication Crisis in Empirical Computer Science. *Communications of the ACM*. 63(8):70-79. August 2020.
- J5 M Claypool, A Cockburn and C Gutwin. The Impact of Motion and Delay on Selecting Game Targets with a Mouse. *ACM Transactions on Multimedia Computing, Communications, and Applications*. 16(2s):73, 1-14. June 2020.
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- J8 B Lafreniere, C Gutwin, and A Cockburn. Investigating the Post-Training Persistence of Expert Interaction Techniques. *ACM Transactions on Human-Computer Interaction*. 24(4): Article 29 (46 pages). 2017.
- J9 A Cockburn, P Quinn and C Gutwin The Effects of Interaction Sequencing on User Experience and Preference. *International Journal of Human-Computer Studies*. 108:89-104. 2017.

- J10 J Aceituno, S Malacria, P Quinn, N Roussel, A Cockburn and G Casiez. The Design, Use, and Performance of Edge-Scrolling Techniques. *International Journal of Human-Computer Studies*. 97:58-76. 2017.
- J11 J Scarr, C Gutwin, A Cockburn and A Bunt. StencilMaps and EphemeralMaps: Spatially Stable Interfaces that Highlight Command Subsets. *Behaviour and Information Technology*. 34(11):1092-1106. 2015.
- J12 S Fitchett and A Cockburn. An Empirical Characterisation of File Retrieval. *International Journal of Human-Computer Studies*. 74:1-13. 2015.
- J13 A Cockburn, C Gutwin, J Scarr and S Malacria. Supporting Novice to Expert Transitions in User Interfaces. *ACM Computing Surveys*. 47(2):31:1-36. 2014.
- J14 J Scarr, A Cockburn and C Gutwin. Supporting and Exploiting Spatial Memory in User Interfaces. *Foundations and Trends in Human-Computer Interaction*. 6(1):1-84. 2013.
- J15 P Quinn, A Cockburn and J Delamarche. Examining the Costs of Multiple Trajectory Pointing Techniques. *International Journal of Human-Computer Studies*. 71(4):492-509. 2013.
- J16 S Tak and A Cockburn. Enhanced Spatial Stability with Hilbert and Moore Treemaps. *Transactions on Visualization and Computer Graphics*. 19(1):141-148. 2013.
- J17 A Cockburn, D Ahlstrom and C Gutwin. Understanding Performance in Touch Selections: Tap, Drag, and Radial Pointing Drag with Finger, Stylus and Mouse. *International Journal of Human-Computer Studies*. 70(3):218-233. 2012.
- J18 J Hauber, A Cockburn, M Billingham and H Regenbrecht. The Impact of Collaborative Style on the Perception of 2D and 3D Videoconferencing Interfaces. *Open Software Engineering Journal*. 6:1-20. 2012.
- J19 A Cockburn, P Quinn, C Gutwin, G Ramos and J Looser. Air Pointing: Design and Evaluation of Spatial Target Acquisition with and without Visual Feedback. *International Journal of Human-Computer Studies*. 69:401-414. 2011.
- J20 E Tanvir, A Bunt, A Cockburn and P Irani. Improving Cascading Menu Selections with Adaptive Activation Areas. *International Journal of Human-Computer Studies*. 69:769-785. 2011.
- J21 A Cockburn and C Gutwin. A Model of Novice and Expert Navigation Performance in Constrained Input Interfaces. *ACM Transactions on Computer-Human Interaction*. ACM Press. 7(3):1-38. 2010.
- J22 A Cockburn and C Gutwin. A Predictive Model of Human Performance with Scrolling and Hierarchical Lists. *Human-Computer Interaction Journal*. Taylor and Francis. 24(3): 273-314. 2009.
- J23 A Cockburn, A Karlson and B Bederson. A Review of Overview+Detail, Zooming, and Focus+Context Interfaces. *ACM Computing Surveys*. ACM Press. 41(1): 1-31. 2008.
- J24 J Alexander, A Cockburn and R Lobb. AppMonitor: A Tool for Recording User Actions in Unmodified Windows Applications. *Behavior Research Methods*. Psychonomic Society. 40(2): 413-421. 2008.

- J25 G Casiez, D Vogel, R Balakrishnan and A Cockburn. The Impact of Control-Display Gain on User Performance in Pointing Tasks. *Human-Computer Interaction Journal*. Taylor and Francis. 23(3): 215-250. 2008.
- J26 S Jones, M Jones, G Marsden, D Patel and A Cockburn. An Evaluation Of Integrated Zooming and Scrolling On Small Screens *International Journal of Human-Computer Studies*. 63(3): 271-303. Elsevier Science. 2005.
- J27 A Cockburn and S Brewster. Multimodal Feedback for the Acquisition of Small Targets *Ergonomics*. Taylor & Francis. 48(9): 1129-1150. 2005.
- J28 M Moyle and A Cockburn. A Flick in the Right Direction: A Case Study of Gestural Input *Behaviour and Information Technology*. 24(4): 275-288. Taylor & Francis. 2005.
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- J30 A Cockburn and B McKenzie. Evaluating Spatial Memory in Two and Three Dimensions *International Journal of Human-Computer Studies*. 61(3): 359-373. Elsevier Science. 2004.
- J31 A Cockburn and M Smith. Hidden Messages: Evaluating the Efficiency of Code Elision in Program Navigation *Interacting with Computers: The Interdisciplinary Journal of Human-Computer Interaction*. 15(3): 387-407. 2003.
- J32 A Cockburn, S Greenberg, S Jones, B McKenzie and M Moyle. Improving Web Page Revisitation: Analysis, Design, and Evaluation *Information Technology and Society: Special Issue on Web Navigation, editors B Shneiderman, J Lazar, M Ivory*. 3(1): 159-183. 2003.
- J33 A Cockburn, B McKenzie and M JasonSmith. Pushing Back: Evaluating a New Behaviour for the Back and Forward Buttons in Web Browsers *International Journal of Human-Computer Studies*. 57(5):397-414. Elsevier Science. 2002.
- J34 T Bell, A Cockburn, B McKenzie and J Vargo. Digital Lectures: If You Make Them, Will Students Use Them? Constraints on Effective Delivery of Flexible Learning Systems *International Multimedia Electronic Journal of Computer-Enhanced Learning*. 3(2). Association for the Advancement of Computing in Education. 2001 This paper was one of 25 (from 115 full papers) selected from the proceedings of ED-MEDIA 2001 for adaptation and inclusion in the journal.
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- J36 A Cockburn, T Bell and B McKenzie. Death to the Office of the Nineties: An HCI Perspective on Some Problems in Modern Office Information Systems *Journal of Research and Practice in Information Technology, Special Issue on Human-Computer Interaction (HCI)*., 33(1):68-82. Australian Computer Society. 2001.
- J37 A Cockburn and B McKenzie. What Do Web Users Do? An Empirical Analysis of Web Use. *International Journal of Human-Computer Studies*, 54(6):903-922. Academic Press. 2001.
- J38 A Cockburn and S Greenberg. Issues of Page Representation and Organisation in Web Browser's Revisitation Tools. *Australian Journal of Information Systems*, 7(2):120-127. 2000.

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- J43 A Cockburn and S Jones. Four Principles for Groupware Design. *Interacting with Computers: The Interdisciplinary Journal of Human-Computer Interaction*, 7(2):195–210. Elsevier. 1995.
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- C3 K Lam, C Gutwin, M Klarkowski, and A Cockburn. More Errors vs. Longer Commands: The Effects of Repetition and Reduced Expressiveness on Input Interpretation Error, Learning, and User Preference. *Proceedings of ACM CHI 2022*. New Orleans, USA. 2022.
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- C6 S Liu, M Claypool, A Cockburn, R Eg, C Gutwin, and K Raaen. Datasets – Moving Target Selection with Delay. *Proceedings of the 12th ACM Multimedia Systems Conference (MMSys ’21)*, Istanbul, Turkey. 2021.

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- c8 P Schmid, S Malacria, A Cockburn and M Nancel. Interaction Interferences: Implications of Last-Instant System State Changes. *Proceedings of ACM UIST'2020 Symposium on User Interface Software and Technology*. Minneapolis, USA. 2020.
- c9 P Palanque, A Cockburn and C Gutwin. A Classification of Faults Covering the Human-Computer Interaction Loop. *Proceedings of SafeComp 2020: 39th International Conference on Computer Safety, Reliability and Security*. Lisbon, Portugal. 2020.
- c10 A Mairena, M Dechant, C Gutwin and A Cockburn. A Baseline Study of Emphasis Effects in Information Visualization. *Proceedings of Graphics Interface 2020*. Toronto, Canada. 2020.
- c11 C Gutwin, A Cockburn, M van der Kamp, J Storrington and C Philips. Testing the Limits of the Spatial Approach: Comparing Retrieval and Revisitation Performance of Spatial and Paged Data Organizations for Large Item Sets. *Proceedings of Graphics Interface 2020*. Toronto, Canada. 2020.
- c12 A Cockburn, B Lewis, P Quinn and C Gutwin. Framing Effects Influence Interface Feature Decisions. *Proceedings of ACM CHI 2020*. Hawai'i. 2020.
- c13 B Lewis, G d'Eon, A Cockburn and D Vogel. KeyMap: Improving Keyboard Shortcut Vocabulary Using Norman's Mapping. *Proceedings of ACM CHI 2020*. Hawai'i. 2020.
- c14 A Goguy, S Malacria, A Cockburn, and C Gutwin. Reducing Error Aversion to Support Novice-to-Expert Transitions with FastTap. *Proceedings of the 31st Francophone Conference on Human-Computer Interaction – IHM 2019*. Grenoble, France. 2019. **Best paper award**
- c15 P Palanque, A Cockburn, L Désert-Legendre, C Gutwin and Y Délérès. Brace Touch: a Dependable, Turbulence-Tolerant, Multi-Touch Interaction Technique for Interactive Cockpits. *Proceedings of the 38th International Conference on Computer Safety, Reliability and Security - SafeComp 2019*. Turku, Finland. 2019.
- c16 C Martinie, P Palanque, E Bouzekri, A Cockburn, A Canny and E Barboni. Analysing and Demonstrating Tool-Supported Customizable Task Notations. *Proceedings of the 11th ACM SIGCHI Symposium on Engineering Interactive Computing Systems*. Valencia, Spain. 2019.
- c17 Q Roy, C Zakaria, W Kim, M Nancel, ST Perrault, A Misra and A Cockburn. A Comparative Study of Pointing Techniques for Eyewear Using a Simulated Pedestrian Environment. *Proceedings of the 17th IFIP TC.13 International Conference on Human-Computer Interaction*. Cyprus. 2019.
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- c23 A Goguet, G Casiez, A Cockburn and C Gutwin. Storyboard-Based Empirical Modelling of Touch Interface Performance. *Proceedings of ACM CHI 2018*. Montreal, Canada. 2018. Paper 445. **Honourable mention award**
- c24 A Cockburn, C Gutwin, P Palanque, Y Deleris, C Trask, A Coveney, M Yung and K MacLean. Turbulent Touch: Touchscreen Input for Cockpit Flight Displays. *Proceedings of ACM CHI 2017*. Denver, CO. 2017. 6742-6753.
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- c26 C Gutwin, A Cockburn and A Coveney. Peripheral Popout: The Influence of Visual Angle on Popout Effects. *Proceedings of ACM CHI 2017*. Denver, CO. 2017. 208-219.
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- c28 P Quinn and A Cockburn. When Bad Feels Good: Assistance Failures and Interface Preferences. *Proceedings of CHI'2016*. San Jose, California. 2016. 4005-4010.
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- c30 K Schramm, C Gutwin and A Cockburn. Supporting Transitions to Expertise in Hidden Toolbars *Proceedings of CHI'2016*. San Jose, California. 2016. 4687-4698.
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- c43 S Malacria, G Bailly, J Harrison, A Cockburn, and C Gutwin. Promoting Hotkey Use through Rehearsal with ExposeHK. *Proceedings of CHI'2013*. Paris, France. 2013. 573-582.
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- c51 J Scarr, A Cockburn, C Gutwin, and P Quinn. Dips and Ceilings: Understanding and Supporting Transitions to Expertise in User Interfaces. *Proceedings of CHI'2011*. Vancouver, Canada, May. 2011. 2741-2750.
- c52 V Levesque, L Oram, KE MacLean, A Cockburn, N Marchuk, D Johnson, JE Colgate, and M Peshkin. Enhancing Physicality in Touch Interaction with Programmable Friction. *Proceedings of CHI'2011*. Vancouver, Canada, May. 2011. 2481-2490. **Best paper award.**
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- c60 S Fitchett and A Cockburn. Using Multitouch Input to Support Hybrid Relative and Absolute Mobile Scrolling *People and Computers 24. Proceedings of the British HCI Conference*. Dundee, 6-10 September. 2010.
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- c63 S Tak and A Cockburn. Window Watcher: A Visualisation Tool for Understanding Window Switching Activities. *Proceedings of OzCHI'2009*. Melbourne, Australia, 23-27 November. 2009. 241-248.
- c64 S Tak, A Cockburn, K Humm, D Ahlstrom, C Gutwin and J Scarr. Improving Window Switching Interfaces. *Proceedings of INTERACT'2009*. Uppsala, Sweden, 24-28 August. 2009. 187-200.

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- c66 J Alexander, A Cockburn, S Fitchett, C Gutwin and S Greenberg. Revisiting Read Wear: Analysis, Design, and Evaluation of a Footprints Scrollbar. *Proceedings of ACM CHI'2009 Conference on Human Factors in Computing Systems*. Boston, MA, 5 April - 9 April. 2009. 1665-1674.
- c67 E Tanvir, J Cullen, P Irani and A Cockburn. Improving Selection in Cascading Pull-Down Menus. *Proceedings of ACM CHI'2008 Conference on Human Factors in Computing Systems*. Florence, Italy, 5 April - 10 April. 2008. 1381-1384.
- c68 J Alexander and A Cockburn. An Empirical Characterisation of Electronic Document Navigation. *Proceedings of Graphics Interface '08*. Windsor, Ontario, Canada, May 28-30. 2008. 123-130. **Michael A. J. Sweeney best student paper award.**
- c69 P Quinn, A Cockburn, Indratmo and C Gutwin An Investigation of Dynamic Landmarking Functions. *Proceedings of Advanced Visual Interfaces (AVI'08)*. Napoli, Italy, May 28-30. 2008. ACM Press.
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- c73 A Cockburn, C Gutwin and S Greenberg. A Predictive Model of Menu Performance *Proceedings of ACM CHI'2007 Conference on Human Factors in Computing Systems* San Jose, CA, 24–27 April. 2007, 627–636. ACM Press.
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- c99 A Cockburn and A Siresena. Evaluating Mobile Text Entry with the Fastap Keypad Acceptance rate: 33%, 8 from 24. *People and Computers XVII (Volume 2): British Computer Society Conference on Human Computer Interaction* Bath, England, September 2003, pages 77–80. Springer-Verlag.
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Patents and Patent Applications

- P1 Andy Cockburn, Mark Billinghurst, Dinesh Mandalapu. User Interface Device. US Patent Application Number: PCT/IN2011/000897.

Other: Refereed Videos, Media Reports and Non-Refereed Publications

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- O2 National Science Challenges report. ‘Meet the researchers: Andy Cockburn, Turbulent touch’. 22/03/2019.
- O3 Marsden update. ‘Young researchers experience international science.’ (PhD student Stephen Fitchett). February 2012.
- O4 Magazine article. New Zealand Listener. “Charge of the tech brigade”. Mar 31, 2012.

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- 07 UC Communications. 'UC/Microsoft internship opens up world for computer science student.' Mar 22, 2011.
- 08 Marsden update. 'Highlights of the 2010 funding round.' November 2010.
- 09 Magazine article. 'Profiling Excellence'. Royal Society of New Zealand. 'Thirty years of research in a single hit', March 2010.
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- 015 Newspaper article. Dominion Post. 'Kiwi mouse comes out of hiding', March 10, 2008. <http://www.stuff.co.nz/4433363a28.html>
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- o39 AJG Cockburn and S Greenberg. Making contact: getting the group communicating. Technical Report 93/498/03, Department of Computer Science, University of Calgary, Alberta T2N 1N4 Canada, 1993.
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Grants and industry research/consulting

Project	Source	Date	Amount
Understanding the human experience of intelligent user interfaces	Marsden. (19-UOC-021)	2020-2023	\$530,000
Travel expenses	Airbus & U. Paul Sabatier	2018	≈ \$7,000
In-Vehicle Touchscreens	NZ Science for Innovation	2017	\$200,000
Travel expenses	ACM CHI Steering Committee	2017	≈ \$4,000
Travel expenses	Australian National University	2016	≈ \$3,000
Travel expenses	Airbus & U. Paul Sabatier	2016	≈ \$5,000
Travel expenses	ACM CHI Academy Award (Seoul)	2015	≈ \$5,000
Benjamin Meaker Visiting Professorship	University of Bristol	2013	£7,000
Understanding and improving the novice to expert transition with user interfaces	Marsden. (10-UOC-020)	2011-2014	\$496,000
Dynamic Multimodal Affordances	HP Innovations Award	2011-2012	US\$40,000
Travel expenses	ACM UIST conference	June 2009	≈ \$4,000
Postdoctoral Fellow	BuildIT	2011-2012	\$116,000
Dynamic Multimodal Affordances	HP Innovations Award	2010-2011	US\$40,000
Travel expenses	ACM UIST conference	June 2009	≈ \$4,000
Scrolling device studies	Logitech Inc	2010	\$10,000
Canadian GRAND project	Canadian Centres of Excellence	2010-2014	C\$25,000,000
BuildIT Emerging Researcher Mentoring Fund	BuildIT	2010	\$8,000
Pythodogical	UC Teaching and Learning	2009-2010	\$15,000
Dynamic Multimodal Affordances	HP Innovations Award	2009-2010	US\$40,000
Travel expenses	ACM UIST conference	June 2009	≈ \$4,000
Travel expenses	ACM CHI conference	Nov. 2008	≈ \$4,000
Improving document navigation interfaces	Marsden. (07-UOC-013)	2007–2010	\$400,000
Accessible AR on Everyday Devices	FRST (UOCX0704)	2007–2011	\$1,875,000
Usability training	Jade Software	2007	≈ \$2,000
Usability training	AMI	2007	≈ \$2,000
Expenses	Logitech Inc., California	April 2007	≈ \$5,000
Expenses	Logitech Inc., California	July 2006	≈ \$2,000
Grant in aid	University of Toronto	July 2006	≈ \$8,000
Grant in aid	University of Saskatoon	June 2006	≈ \$6,000
Grant in aid	University of Calgary	May 2006	≈ \$3,000
Grant in aid	IBM Almaden Research, California	April 2006	≈ \$3,000
NOKIA Pocket (Assoc. with HIT Lab).	Nokia Research Center	2006.	≈ \$100,000.
Speed-Dependent Automatic Zooming	Computer Science	2003	\$3,000
Evaluation of Speed-Coupled Scrolling	Computer Science	2002	\$3,000
Multimedia Learning of Graphics (Assoc.)	UoC Teaching and Learning Ctte.	2002	\$5,000
Fastap Evaluation	Digit Wireless LLC, MA, USA.	2002	\$3,000
Supermedia—The MagicBook Project (Assoc.)	NZ NERF (UOCX0204)	2002	\$333,000
Practical Flexible Delivery of Virtual Learning	UoC (U6360)	1999–2002	\$40,000
Collaborative Programming for Children	Marsden, Royal Soc. (UOC805)	2000–2002	\$135,000
Evaluation of Back/Forward in Web-browsers	Computer Science	2001	\$3,000
Interfaces for WWW navigation.	Microsoft Research, USA.	1999	≈ \$8,000
HCI and multi-media research lab	Computer Science	1999	\$7,400
Video analysis and multi-media lab	UoC (2313728)	1996	\$30,000
Collaborative video analysis	Computer Science	1996	\$3,000
Collaborative microworlds	Computer Science	1995	\$4,000
Asynchronous groupware toolkits	Computer Science	1994	\$2,000

Academic Service

External assessor	2019	Promotion to Full Professor: University of Toronto.
External assessor	2018	Promotion to Full Professor: University of Cambridge.
Rapporteur	2018	Habilitation, Dr Eric Lecolinet, Université Paris Sud, France.
Rapporteur	2018	Habilitation, Dr Marcos Serrano, University Toulouse III Paul Sabbatier, France.
External assessor	2017	Promotion application: University of Waterloo.
Chair	2018-2021	Technical program chair for ACM CHI 2020 Conference
Committee member	2016-2020	Steering Committee for the ACM CHI Conference
Rapporteur	2017	Habilitation, Dr Caroline Appert, University Paris-Sud, France.
Chair	2016-2018	CORE Chris Wallace Research Award Panel
Deputy Chair	2016-2018	PBRF Mathematical and Information Sciences Panel
Editorial	2015–	Editorial Board of Foundations and Trends in Human-Computer Interaction.
Editorial	2015–	Editorial Board of Human-Computer Interaction. Taylor and Francis.
Chair	2012–2015	Papers co-chair for ACM CHI 2014 and 2015 (over 2000 submissions).
Service Award.	2014.	ACM SIGCHI Recognition of Service Award.
Editorial	2012–	Editorial Board of ACM Transactions on Computer-Human Interaction. ACM.
Panel member	2011-2012	Member of the Mathematics, Information Sciences and Technology PBRF panel.
Panel member	2008–2009	BuildIT Postdoctoral Award.
Governance board	2008–2010	Elected member of the governance board of BuildIT.
Panel member	2009, 2011	Member of the Mathematics and Information Sciences Marsden panel.
Panel member	2008–2009	BuildIT Postdoctoral Award.
Panel member	2008–2010	BuildIT Emerging Researcher Travel Fund.
Mentor	2009–2010	BuildIT mentor for early career researchers.
External assessor	2010	Docent application advisor, University of Tampere, Finland.
External assessor	2010	Promotion application for University of Auckland.
External assessor	2007, 2009	Promotion applications for INRIA, University Paris-Sud.
External assessor	2007	Postdoctoral applicants for Ryerson University, Canada.
Editorial	2002–2013	Associate Editor for International Journal of Human-Computer Studies.
Editorial	2002–2013	Member Editorial Board for Interacting with Computers Journal.
Chair	2010–2011	Subcommittee Chair ACM CHI'11.
Senior Reviewing	2004–	Associate Chair (Papers) for ACM CHI'04, CHI'08, CHI'09.
Senior Reviewing	2009	Associate Chair (Papers) for ACM UIST 2009.
Senior Reviewing	2007	Short papers chair for INTERACT 2007
Chair	2004–2005	Papers chair for Australasian User Interface Conferences
Competition judge	2009	Student Research Competition at CHI 2009.
Journal Reviewing	1993–	Communications of the ACM, Human-Computer Interaction Journal, IEEE Transactions on Visualization and Computer Graphics, ACM Transactions on Computer-Human Interaction, Ergonomics, Information and Software Technology, Information Technology and Society, Interacting with Computers, Virtual Reality, Personal and Ubiquitous Computing, Journal of Computer-Mediated Communication, and International Journal of Human-Computer Studies.
Misc.	2003	Organised the 'Masterclass and Symposium on Interacting with and Through Next Generation Computer Systems', held at the University of Canterbury.
Organising committees	1996, 1998	OzCHI
Doctoral consortium	2008	CHI 2008
Other reviewing	Ongoing	Graphics Interface 2009, 2010, 2011; UIST Demos 2009; ACM CHI 2007, 2006, 2005, 2004, 2003, 2002. AICCS-07; ACM UIST 2007, 2006, 2005, 2003; InfoVis 2006; BEYOND time and errors: novel evaluation methods for Information Visualization (BELIV'06); ACM Advanced Visual Interfaces (AVI) 2006; IEEE Tencon'05; CHINZ'05; Interact'05; MobileHCI'05; ACM CSCW 2004; ACM UIST 2003; INTERACT 2003; Australasian User Interface Conference, 2000–2003; The Active Web, '99; ACM Conference on Data Communications 1994; ACM Conference on Human Factors in Computing Systems 1996; OZCHI'94-97; APCHI'96 & '98; ACM Hypertext '97; Graphics Interface '97; InterAct '97; ACM Group '97.

Invited seminar presentations outside the University of Canterbury

Keynote address, ACM Interactive Surfaces and Spaces Conference, Wellington, NZ.	November, 2022.
Keynote address, INTERACT Conference, Mumbai.	September, 2017.
Dean's Colloquium, ANU, Australia.	August, 2016.
Engineering & Computer Science, ANU, Australia.	August, 2016.
Institute of Advanced Studies, University of Bristol, UK.	August, 2013.
Department of Computer Science, University of Glasgow, UK.	August, 2013.
Colloquium Polaris, INRIA, Lille, France.	July, 2013.
Department of Computer Science, University of Manitoba, Canada.	August, 2010.
Department of Computer Science, University of Manitoba, Canada.	August, 2010.
Department of Computer Science, University of British Columbia, Canada.	August, 2010.
Keynote address, Australasian Computer Science Week.	January, 2010.
Department of Computer Science, University of British Columbia, Canada.	July, 2009.
Department of Computer Science, University of Calgary, Canada.	July, 2008.
Department of Computer Science, Swansea University, UK.	September, 2008.
INRIA, Universite Paris-Sud, France.	September, 2006.
Department of Computer Science, Swansea University, UK.	August, 2006.
Logitech Inc., California.	July, 2006.
Department of Computer Science, Dalhousie University, Nova Scotia.	July, 2006.
Digital Graphics Project Lab, University of Toronto.	June, 2006.
Department of Computer Science, University of Saskatoon.	June, 2006.
Department of Computer Science, University of Calgary.	April, 2006.
IBM Almaden Research Centre.	March, 2006.
Digital Fusion Inc..	February, 2006.
Usability Professionals Association (UPA), Canterbury Innovation Incubator.	November, 2005.
Usability Professionals Association (UPA), Canterbury Innovation Incubator.	November, 2004.
Department of Computer Science, University of Calgary, Canada.	November, 2003.
Human-Computer Interaction Lab, Univ. of Maryland, College Park, USA.	October, 2003.
Department of Computer Science, University of Glasgow.	September, 2003.
Department of Psychology, University of York.	September, 2003.
Interaction Centre, University College London.	September, 2003.
Department of Computer Science, University of Southampton.	September, 2003.
New Zealand Computer Society, Christchurch.	June, 2003.
Department of Computer Science, University of Waikato.	December, 2002.
Allied Telesyn Research.	November, 2002.
Department of Computer Science, University of Calgary, Canada.	October, 2001.
Institute for Info. Tech., National Research Center, Ottawa, Canada.	October, 2001.
Grouplab, University of Calgary, Canada.	October, 2001.
Department of Computer Science, University of Saskatchewan, Canada.	October, 2001.
Department of Computer Science, University of Cape Town, South Africa.	September, 2001.
Department of Computer Science, Victoria University of Wellington.	July, 2000.
Inaugural ACM SIGCHI.NZ meeting. Massey University.	June 2000.
Department of Computer Science, University of Waikato.	May, 2000.
Department of Computer Science, University of Calgary.	March, 1999.
Center for LifeLong Learning and Design, University of Colorado, Boulder.	November, 1998.
Norsk Regencentral (Norwegian Research Centre), Oslo, Norway.	August, 1998.
Department of Computer Science, University of Calgary.	January, 1996.
Department of Computer Science, Massey University.	January, 1993.
Department of Computer Science, University of Waikato.	January, 1993.

Visiting academics

I have attracted many world leaders in Human-Computer Interaction to the department. Most of them have presented several seminars while at Canterbury, including numerous ‘Science Prestige Lectures’ and Ben Sheiderman’s Royal Society Evening Lecture.

Prof. Joanna McGrenere	University of British Columbia, Vancouver, Canada.	One month, 2023.
Prof. Carl Gutwin	University of Saskatchewan, Saskatoon, Canada.	Two months, 2023.
Dr. Philip Quinn	Google Research, Mountain View, California.	One year, 2020-2021.
Prof. Carl Gutwin	University of Saskatchewan, Saskatoon, Canada.	Four weeks, 2020.
Prof. Carl Gutwin	University of Saskatchewan, Saskatoon, Canada.	Seven weeks, 2015-2016.
Prof. Wolfgang Stuerzlinger	University of Waterloo, Canada	Three months, 2011-2012
Prof. Kari-Jouko Raiha	University of Tampere, Finland	Nine months, 2009-2010
Dr. Saila Ovaska	University of Tampere, Finland	Nine months, 2009-2010
Dr. David Ahlstrom	Klagenfurt University, Austria.	Eighteen months, 2008-2010.
Prof. Carl Gutwin	University of Saskatchewan, Saskatoon, Canada.	Three months, 2008.
Prof. Karon MacLean	University of British Columbia, Canada.	Six months, 2007-2008.
Prof. Bob Kraut	Carnegie Mellon University.	Erskine Visitor. Three months, 2008.
Prof. Andrew Monk	University of York, UK.	Three months, 2008.
Dr. Gonzalo Ramos	University of Toronto, Canada.	One month, 2007.
Prof. Carl Gutwin	University of Saskatchewan, Saskatoon, Canada.	Erskine Fellow. Four months, 2007.
Prof. Alistair Sutcliffe	University of Manchester, UK.	One month, 2007.
Prof. Carl Gutwin	University of Saskatchewan, Saskatoon, Canada.	One week, 2005.
Prof. Ben Bederson	University of Maryland, Maryland, USA.	One week, 2004.
Prof. Ben Shneiderman	University of Maryland, Maryland, USA.	Erskine Fellow. One month, 2003.
Prof. Jenny Preece	University of Maryland, Baltimore County, Maryland.	Erskine Fellow. One month, 2003.
Prof. Stephen Brewster	University of Glasgow, UK.	Erskine Fellow. Six months, 2003.
Prof. Gerhard Fischer	University of Colorado, Boulder.	One year, 2002–2003.
Prof. Bob Spence	Imperial College London.	Erskine Fellow. One month, 2002.
Prof. Gerhard Fischer	University of Colorado, Boulder.	Erskine Fellow. One month, 2000.
Prof. Harold Thimbleby	Middlesex University, UK.	Erskine Fellow. One month, 1997.
Dr Allen Cypher	Apple Research, Cupertino, California.	One week, 1996.
Dr Akihiko Machizawa	Communications Research Laboratory, Japan.	Three years, 1996–1998.
Professor Brian Wyvill	University of Calgary, Canada.	Erskine Fellow. Two months, 1996.
Professor Saul Greenberg	University of Calgary, Canada.	Erskine Fellow. Six months, 1995.
Carl Gutwin	University of Calgary, Canada.	Two months, 1995.
Dr Steve Jones	University of Abertay, Dundee.	Six months, 1995.

Expert Witness Consulting

Role	Expert witness for Finnegan, Henderson, Farabow, Garrett & Dunner, counsel for Samsung. (analysis).
Case	Smith Interface Technologies v. Samsung. <i>Eastern District of Texas</i> . 2:22-cv-00290-JRG
Dates	November 2022 – June 2023.
Role	Expert witness for Morrison Foerster, counsel for Apple. (analysis, reports, deposition).
Case	Firstface Co. Ltd. v. Apple Inc. <i>Northern District of California</i> . 3:15-cv-02245-JD.
Dates	June 2022 –
Role	Expert witness for Finnegan, Henderson, Farabow, Garrett & Dunner, counsel for Samsung. (analysis).
Case	Village Green Technologies v. Samsung. <i>Eastern District of Texas</i> . 2:21-cv-00323-JRG-RSP
Dates	January 2022 – March 2022.
Role	Expert witness for Desmarais, counsel for IBM. (analysis, reports, deposition).
Case	Chewy, Inc. v. IBM. <i>Southern District of New York</i> . 1:21-cv-01319-JSR.
Dates	August 2021 – Jan 2023.
Role	Expert witness for Farella, Braun & Martel, counsel for Google. (analysis, reports, testimony at trial).
Case	Profectus Technology versus Google. <i>Western District of Texas</i> . 6:20-cv-101-ADA.
Dates	March 2021 – October 2021.
Role	Expert witness for Latham & Watkins and Allen & Overy, counsel for Facebook/Instagram/WhatsApp/Meta. (analysis, reports, deposition).
Case	Facebook/Meta Platforms <i>et al.</i> versus Wrinkl <i>Patent Trial and Appeals Board</i> . IPR2021-00882, -00883
Dates	February 2021 – November 2022.
Role	Expert witness for Morrison & Foerster, counsel for Renesas. (analysis).
Case	Neodron versus Renesas Electronics Corp. <i>Western District of Texas</i> . 6:20-CV-00529.
Dates	December 2020 – August 2021.
Role	Expert witness for DLA Piper, counsel for Samsung. (analysis, declaration).
Case	Neonode versus Samsung. <i>Western District of Texas</i> . 6:20-CV-00507.
Dates	September 2020 – July 2023.
Role	Expert witness for DLA Piper (counsel for Apple, Microsoft and ASUS), Morrison & Foerster (counsel for Amazon), Finnegan, Henderson, Farabow, Garrett & Dunner (counsel for LG), O'Melveny & Myers (counsel for Samsung), Vasquez Benisek & Lindgren (counsel for ASUS). (analysis).
Case	Neodron versus Apple, Microsoft, Amazon & others. <i>US International Trade Commission</i> . 337-TA-1193.
Dates	May 2020 – November 2020.

Role	Expert witness for Desmarais, counsel for IBM. (analysis, reports).
Case	IBM versus Zillow Group. <i>Central District of California</i> . 8:19-CV-01777.
Dates	October 2019 – May 2020.
Role	Expert witness for DLA Piper (counsel for Microsoft, HP, Lenovo), Morrison & Foerster (counsel for Amazon), Finnegan, Henderson, Farabow, Garrett & Dunner (counsel for Motorola and Lenovo), Alston & Bird (counsel for Dell), O'Melveny & Myers (counsel for Samsung). (analysis, reports, deposition).
Case	Neodron versus Microsoft, HP, Amazon, Samsung, Dell, Motorola, Lenovo. <i>US International Trade Commission</i> . 337-TA-1162.
Dates	August 2019 – December 2020.
Role	Expert witness for Jones Day, counsel for Google and Huawei. (analysis).
Case	American Patents versus Huawei.
Dates	April 2019 – July 2019
Role	Expert witness for Gilbert+Tobin, counsel for Aristocrat Technologies. (reports, testimony at trial).
Case	Aristocrat Technologies versus Commissioner of Patents. <i>Federal Court of Australia</i> . NSD 1343/2018.
Dates	September 2018 – June 2020
Role	Expert witness for Williams & Connolly and Alston & Bird, counsel for Google and ASUS Inc. (reports, deposition).
Case	Koninklijke Philips versus ASUS. <i>Northern District of California</i> 4:18-cv-01885-HSG.
Dates	March 2016 – March 2020
Role	Expert witness for Williams and Connolly, counsel for Google Inc. (reports, deposition).
Case	Google versus Philips. <i>Patent Trial and Appeal Board</i> . IPR2017-00386/387/388/389.
Dates	March 2016 – March 2020
Role	Expert witness for DLA Piper, counsel for Apple Inc. (reports, deposition, testimony at trial).
Case	Immersion versus Apple. <i>US International Trade Commission</i> . 337-TA-1004 and 337-TA-990 (consolidated).
Dates	June 2016 – May 2017
Role	Expert witness for DLA Piper, counsel for Apple Inc. (reports).
Case	Apple versus Immersion. <i>Patent Trial and Appeal Board</i> . IPR2016-01777.
Dates	June 2016 – May 2017
Role	Expert witness for Wilmer Cutler Pickering Hale and Dorr, counsel for Apple Inc. (analysis).
Case	Core Wireless Licensing S.a.r.l. v. Apple Inc. <i>Eastern District of Texas</i> . 6:14-cv-00751 and 6:14-cv-00752.
Dates	August 2015 – June 2016
Role	Expert witness for Weil, Gotshal & Manges, counsel for Apple Inc.

	(analysis).
Case	Motorola Mobility Inc. versus Apple Inc. <i>Southern District of Florida</i> . 10-CV-23580-RNS-TEB and 12-CV-20271-RNS-TEB.
Dates	October 2013 – March 2014
Role	Expert witness for Gibson, Dunn & Crutcher, counsel for Apple Inc. (reports, deposition, testimony at trial).
Case	Apple Inc. versus Samsung Electronics Co. Ltd. <i>Northern District of California</i> . 12-CV-0630-LHK.
Dates	June 2013 – June 2014
Role	Expert witness for Herbert Smith Freehills, counsel for Apple Inc. (reports, testimony at trial).
Case	Apple Inc. versus Samsung Electronics Co. Ltd. <i>Federal Court of Australia</i> . NSD 1243 of 2011.
Dates	September 2011 – May 2013

Other

- Member of the Association of Computing Machinery (ACM).
- Member of the ACM Special Interest Group of Computer-Human Interaction.