

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner

v.

SMITH INTERFACE TECHNOLOGIES, LLC,

Patent Owner

Case IPR2024-01091
Patent No 10,936,114

DECLARATION OF RAJEEV SURATI, Ph.D.

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	PROFESSIONAL BACKGROUND	1
III.	COMPENSATION	10
IV.	LEGAL CONSIDERATION	10
	A. Anticipation	10
	B. Obviousness	11
	C. Claim Interpretation	12
V.	OVERVIEW OF TASK & BASIS FOR OPINIONS	13
VI.	LEVEL OF SKILL IN THE RELEVANT ART	14
VII.	OVERVIEW OF THE CITED ART	15
	A. U.S. Patent Pub. No. 2010/0302281 (“Kim”)	15
	1. User gestures detected via “interrupt” in “selected mode” (i.e., non-zoom mode)	15
	2. User gestures in “zoom mode”	16
	B. U.S. Patent Pub. No. 2009/0273571 (“Bowens”)	19
	C. U.S. Patent Pub. No. 2010/0156818 (“Burrough”)	21
VIII.	OVERVIEW OF THE ’114 PATENT	22
	A. Claims 1, 32, 34, and 64	23
	B. Claims 27 and 59	23
	C. Claims 30 and 62	24
IX.	CLAIM CONSTRUCTION	24
	A. “Magnitude of [a] / [the] Duration of the Gesture”	24
	B. “Touch State”	27
	C. “Inversely Related To”	27
X.	CLAIMS 1, 32, 34, AND 64 (GROUNDS 1A, 1B, 2A, 2B)	28
	A. The Petition Fails to Consistently Map “The Duration” of “The Gesture”	28
	1. Rather than identify a common gesture for the claims’ “the gesture,” the Petition points to three distinct gestures	28
	2. Rather than identify a common duration for the claims’ “the magnitude of the duration,” the Petition points to three distinct durations that can never even overlap	32
	3. These “gesture” and “duration” defects are present in all grounds for all of claims 1, 32, 34, and 64	34
	B. The Petition Fails to Demonstrate that Performance of the Mapped “Operation / Function” Occurs “When” / “Based On” / “In Response To” “a Duration of the Gesture” “is Less Than A First Magnitude Threshold”	36

C.	The Petition Fails To Demonstrate That Performance of the Mapped “Another Operation / Function” Occurs “When” / “Based On” / “In Response To” “the Duration of the Gesture Being Detected” “is Greater Than a Second Magnitude Threshold”	38
1.	Ground 1 Mapping	39
2.	Ground 2 Mapping	41
XI.	CLAIMS 27 AND 59 (GROUNDS 1A, 1B, 2A, 2B).....	42
A.	The Petition Fails to Identify a “First” or “Second” “Touch State” As Properly Construed	42
XII.	CLAIMS 30 AND 62 (GROUNDS 1C, 1D, 2C, 2D).....	45
A.	The Petition Fails to Identify an Evidentiary Basis to Add Haptic Feedback to Kim’s Double Tap Gesture.....	45
XIII.	CONCLUSION.....	48

I. INTRODUCTION

1. My name is Dr. Rajeev Surati, Ph.D. I have been retained by Smith Interfaces Technologies, LLC as an independent expert consultant in this inter partes review (“IPR”) proceeding before the United States Patent and Trademark Office (“PTO”).

II. PROFESSIONAL BACKGROUND

2. All of my opinions stated in this Declaration are based on my own personal knowledge and professional judgment. In forming my opinions, I have relied on my knowledge and experience in designing, developing, and researching the technology referenced in this Declaration.

3. I am over 18 years of age and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein. I understand that a copy of my current curriculum vitae, which details my education and professional and academic experience, is being submitted as EX2002. The following provides a brief overview of some of my experience that is relevant to the matters set forth in this Declaration.

4. I hold a Doctor of Philosophy (Ph.D.) degree in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology (“MIT”) (awarded in 1999) with a Grade Point Average of 5.0/5.0. I obtained a Master of Science degree in Electrical Engineering and Computer Science from MIT (awarded

in 1995) with a Grade Point Average of 5.0/5.0. I have a Bachelor of Science degree in Electrical Engineering from MIT (awarded 1992), graduating with a Grade Point Average of 4.9/5.0.

5. My Ph.D. thesis was entitled “Scalable Self-Calibrating Technology for Large Scale Displays.” My master’s thesis was entitled “Practical Partial Evaluation.” My undergraduate thesis, for which I received MIT EECS’s William A. Martin thesis prize for best undergraduate thesis, was entitled “A Parallelizing Compiler based on Partial Evaluation.” I was also awarded the Department of Energy’s highly-selective Computational Science Fellowship in 1995, which funded my Ph.D. studies.

6. In 1989, I began programming embedded systems and, in 1995, built one of the first publicly available Internet Coke Machines. During that time, I worked on various user interfaces. For example, one to augment the coke machine to dispense coke and another that became one of the early ecommerce mechanisms, using standards-based protocols for tracking user consumption, payments, and drink stock.

7. In 1997, while at MIT pursuing my Ph.D., I started a company called Flash Communications. At Flash, I invented an instant messaging platform focused on enterprise needs. I had the idea while observing the popularity of the Zephyr Instant Messaging Service at MIT beginning in 1988. Attracted by Flash’s

enterprise focus, Microsoft acquired Flash in 1998. With Microsoft, we built both a client and server product. The basic protocol we invented became the foundation for the well-known XMPP protocol that was widely used in the mid-2000s among instant messaging providers. I developed both the client and server products and dealt with many, if not all, of the issues one might face when implementing user interfaces for instant messaging systems. In fact, we helped to build Microsoft's famous MSN product, which adopted various user interface elements we created.

8. As a result of this experience, I became heavily involved with User Interface design on desktop machines, experience that I have continued to develop by building desktop, mobile, and web-based applications used by millions of people.

9. After graduating, I joined Microsoft (as was required by Microsoft in its acquisition of Flash Communications), where I worked on both client and server technologies related to instant messaging. My work spanned both the Microsoft Exchange Instant Messaging product that was released in 2000 and MSN Messenger.

10. From 2000 to 2007, I cofounded, led, and sold a business called photo.net to Namemedia, which is now part of GoDaddy.com. In early 2000, Photo.net was considered a top 1,000 website and it received large amounts of traffic. I built the site from its beginning as a single computer installed in a datacenter to a full rack of computers in that same data center. As a result, I became very familiar with the careful design and programming one must employ to build

and maintain systems that enable both engaging user interfaces and experiences at scale.

11. At photo.net, we prototyped many fundamental Internet community features, such as photo sharing, social networking, and memberships. The photo.net system was written on top of Oracle SQL Database and served up many millions of web pages each day (corresponding to millions of records) with high-volume inserts. The system also incorporated an ecommerce platform used to bill subscriptions, track users, etc. I spent seven years running the site, both writing new features driven by the Oracle SQL database and maintaining tables containing the many millions of records generated by the site. I also served as the database administrator, which provided me with extensive operational experience running such a system. I dealt with everything from database query speedup to the more mundane day-to-day issues, such as the maintenance of relational databases, including backups. In addition to the web interface, we also ran a mobile version of the product based on WAP, which I helped to develop.

12. After developing one of the first photo sharing sites, we further increased user engagement by designing an innovative photo rating interface. Our photo rating system became a huge draw for the site. The rating system increased engagement by four orders of magnitude, ultimately resulting in Sergey Brin, cofounder of Google, asking photo.net to provide imagery to Google for a screen

saver application. Joichi Ito, former head of the MIT Media Lab and a famous internet luminary called it “the best photo sharing site” in 2001.

13. I also innovated user interface technology at Nexaweb, where I was an investor and technical advisor. Nexaweb designed User Interfaces that worked well over the web. At Nexaweb, I spent a great deal of time solving underlying issues related to implementing a UI framework both in Java and Javascript. We also innovated a mechanism using server push prior to the AJAX becoming widely adopted.

14. In 2004, I started Scalable Display Technologies based on the technology in my Ph.D. thesis and the related patent (U.S. Patent No. 6,456,339) entitled “Super-resolution Display.” As part of my Ph.D. thesis, I designed a special display that allows one to create ultra-high-resolution displays composed of multiple projectors tiled with a slight overlap. The system uses camera-based feedback to create an inverse map that drives the system such that a person can only see a continuous, seamless display. There is no visible bezel or overlap. During this project, I became familiar with how and why to drive content onto the display. Thus, I also became familiar with content encoding/decoding, user interfaces for driving large displays, multimedia content storage, high resolution imagery, networks, recording, GPUs, storage of content, etc.

15. At Scalable Display Technologies, I developed the core algorithms and implemented—with a team—the entire software system, which included the core user interface, machine vision and embedded components, and a multimedia playback system. Our first customer was Pixar. Today, the software is primarily used by the US military and commercial theme parks, such as Disney and Universal. Scalable is well-known in the industry for having some of the easiest and intuitive software to use.

16. In parallel with my work at Scalable, I lectured at MIT on many subjects, including the Android operating system. In 2008, I worked with a group of MIT students on the development of mobile applications for Android with Rich Miner, a cofounder of Android. Since many students created applications involving Google Maps and localization, I became familiar with these technologies. I also served as a lecturer and mentor at MIT Play Labs, which was an incubator for augmented reality (AR) and virtual reality (VR) software for mobile handsets and headset applications. Notably, in addition to mobile handsets, Android runs on the Oculus headset. As part of that program, I worked with several startup companies on mobile applications, including a startup that developed applications for Telegram, which is a cross-platform, cloud-based instant messaging system.

17. Since 2014, I have worked as an independent consultant for several companies including NEC, Hitachi, Hi Marley, and Estee Lauder.

18. In 2018, I became a senior partner at nCent Labs. In that role, I consulted on the development of an incentive-market-based platform for block chains and cryptocurrency. Another part of my work at nCent Labs focused on the development of SMS messaging applications for the nCent platform. In that part, I developed a full stack application around the protocol.

19. From 2019 to 2020, I served as a Technical Lead of the Skunkworks at Hydrow, which is a startup company that develops indoor rowing machines. In this role, I worked on special projects, including the development of a VR experience using Magic Leap and Oculus that immersed users in a team-based rowing crew on a scull using VR cinematography. I leveraged my experience with user interfaces and Human-Computer Interaction (“HCI”) to develop a system that gives people a sense of rowing on the water with others, while in reality, they were rowing on a rowing machine. We accomplished our goal through a clever use of cinematography. The result was quite compelling and increased user engagement with their exercise program.

20. In 2020, I started a company called Skyline Nav AI Inc. that develops technology that uses a visual location (i.e., the skyline) to geo-locate the place a picture was taken. At Skyline, I built and now maintain a full user experience centered around a workflow for people to snap a picture and use the image’s skyline and downloaded 3D mode to localize a person. I have written applications for both

Android and iOS that communicate with a backend server running the machine vision algorithms.

21. Over the past decade, I have served as a technical consultant and expert witness on patent litigation matters. In the course of this work, I have provided consulting services to a wide variety of technology companies, including BritishTelecom, Apple, IBM, Philips, Shopify, Zillow, Polaris Powered Technologies, Amazon, Salesforce, Hitachi, Slack, Harris Teeter, and others.

22. During the course of my career, I was the inventor of the subject matter for approximately 15 U.S. Patents. I have also received additional patents, including: U.S. Patent No. 8,817,111, entitled “System and method of calibrating a display system free of variation in system input resolution,” U.S. Patent No. 8,994,757, “System and method for providing improved display quality by display adjustment and image processing using optical feedback,” U.S. Patent No. 9,215,455, “System and method of calibrating a display system free of variation in system input resolution,” U.S. Patent No. 9,369,683, “System and method for calibrating a display system using manual and semi-manual techniques,” and U.S. Patent No. 9,497,447, “System and method for color and intensity calibrating of a display system for practical usage.”

23. I am also a co-inventor of patented technology related to instant messaging, including U.S. Patent No. 5,943,478, which describes associated

technology that I developed related to pop-up, two-way messaging over the Internet. While at Microsoft, I was an inventor on several patents, including: U.S. Patent No. 6,260,148 relating to methods and systems for message forwarding and property notifications using electronic subscriptions; and U.S. Patent Nos. 6,415,318 and 6,604,133 relating to inter-enterprise messaging systems using bridgehead servers. Aspects of these patents relate specifically to messaging and notification technology in telecommunications systems.

24. I serve on the advisory boards of several technology companies, including Paneve, which develops general purpose ASICs coupled with compiler technology; Nexaweb, which develops real-time web application frameworks using HTTPS; Antix Labs, which develops compiler technology for a universal gaming platform; and Permabit, which develops content-addressable storage.

25. In addition to my above experience, I have published papers on subjects relating to computing systems, computer network communications, databases, and other subjects within the realm of electrical and computer engineering. I have also received several awards for my contributions as an inventor and entrepreneur, including the Global Indus. Technovator Award 2009 and Laureate of 2009 Computer World Honors Program. My publication and award history are listed in more detail on my CV.

III. COMPENSATION

26. My work on this matter is being billed at my customary rate of \$700 an hour. Also, I am being reimbursed for reasonable expenses I incur in relation to my services. I have no pecuniary interest in the outcome of this proceeding. I understand I will be paid regardless of the outcome of any proceeding in which my work is used.

IV. LEGAL CONSIDERATION

27. I am not an attorney. My understanding of the law is based on information provided by counsel for Smith Interface Technologies, LLC.

A. Anticipation

28. I understand that a reference anticipates a claim if it discloses each and every element recited in the claim, arranged as in the claim, so as to enable a person of ordinary skill in the art (POSITA) to make and use the claimed invention without the need for undue experimentation in light of the general knowledge available in the art. I understand that a U.S. Patent document is presumed to have sufficient description to include sufficient detail for a person of ordinary skill in the art to make and use the subject matter that document describes.

29. I also understand that a claim limitation may be present in an alleged prior art reference either expressly or inherently, but inherency may be established only if such limitation is necessarily present in the reference. I understand inherency cannot be established by probabilities or possibilities, and the mere fact that a certain

thing may result from a given set of circumstances is not sufficient to establish inherency.

B. Obviousness

30. I understand that a claimed invention is obvious and, therefore, not patentable if the subject matter claimed would have been obvious to a person of ordinary skill in the art at the time that the invention of the '114 Patent (a "POSITA"), which I have been asked to treat as December 30, 2011.

31. I understand that a claim can be obvious in view of a single prior art reference (e.g., via modification of that prior art reference) or multiple prior art references (e.g., via a combination of two or more prior art references), if such a modification or combination was within the skill of a POSITA. I understand that there must be some articulated reasoning with some rational underpinning to support a conclusion of obviousness. I also understand that to establish a finding of obviousness one must show that one of ordinary skill in the art would have had a motivation to combine the prior art references to produce the claimed invention and a reasonable expectation that the combination would be successful.

32. I further understand that exemplary rationales that may support a conclusion of obviousness include: (1) simply arranging old elements in a way in which each element performs the same function it was known to perform, and the arrangement yields expected results, (2) merely substituting one element for another

known element in the field, if the substitution yields no more than a predictable result, (3) combining elements in a way that was “obvious to try” because of a design need or market pressure, where there was a finite number of identified, predictable solutions, (4) that design incentives or other market forces in a field would have prompted variations in a work that were predictable to a person of ordinary skill in the art, and (5) that there was some teaching, suggestion, or motivation in the prior art that would have led a POSITA to modify or combine prior art references to arrive at the claimed invention.

C. Claim Interpretation

33. I understand that a claim term is interpreted according to its ordinary and customary meaning as a POSITA would have understood the term in light of the surrounding claim language, other claims, the specification, and the patent’s prosecution history, which are referred to as intrinsic evidence. I also understand that prior art references cited in the patent’s prosecution history are considered intrinsic evidence. I further understand that evidence outside the patent and its prosecution history (e.g., dictionaries and technical articles), may inform the context in which a POSITA would have understood the claims of a patent. I understand this ordinary and customary meaning applies absent unique circumstances, such as where a patent clearly expresses an intent to set forth a special meaning for a term.

V. OVERVIEW OF TASK & BASIS FOR OPINIONS

34. I have been asked to review the '114 Patent. I have been asked to provide opinions related to certain issues from the perspective of a person of ordinary skill, having knowledge of the relevant art, as of December 30, 2011, and—except where otherwise noted—the opinions stated in this declaration are from that perspective. The qualifications and abilities of such a person are described in paragraph 38 below.

35. More particularly, I have been informed that this proceeding is currently at a preliminary stage during which the Patent Trial and Appeal Board (the Board) will decide whether the Petition establishes a reasonable likelihood of at least one claim of the '114 Patent being invalid. I also understand that the Board may review the Petition under a stricter “compelling merits” standard that requires the Petition to make a stronger showing of invalidity; however, my analysis is not performed using this higher standard. At this preliminary stage, I have been asked to focus my analysis on the Petition’s proposed invalidity theories for the '114 Patent’s independent claims 1, 27, 30, 32, 34, 59, 62, and 64.

36. My opinions are based on my education, training, and experience as well as items that I reviewed to prepare my opinions, including the Petition, the documents listed in the Exhibit List included with the Petition, and any other items that I reference in my below analysis.

37. I understand that other issues may arise that require further explanation, and I will provide that explanation if appropriate. As a result, I respectfully reserve the right to update and supplement this declaration and the information and opinions provided herein.

VI. LEVEL OF SKILL IN THE RELEVANT ART

38. I understand that a patent must be analyzed from the perspective of a person of ordinary skill in the art (“POSITA”) as of the time of invention of the patent, which is typically considered to be the patent’s earliest filing date. While I do not necessarily agree with every aspect of Dr. Cockburn’s explanation of the level of ordinary skill in the art, I do not currently believe the aspects of that explanation I would change or clarify would impact the analysis set forth in this declaration. For purposes of this declaration, my opinions are therefore provided from the perspective of the POSITA described in paragraph 26 of Dr. Cockburn’s declaration (EX1003) as of December 30, 2011, which is produced below:

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. Less work experience may be compensated by a higher level of education and vice versa.

VII. OVERVIEW OF THE CITED ART

A. U.S. Patent Pub. No. 2010/0302281 (“Kim”)

39. Kim discloses a mobile device and “touch-based zooming control method.” EX1004, Abstract. Kim discloses detecting gestures and taking responsive action across two modes: a “*selected mode*” “that allows displaying some kind of display target data outputted while a specific application selected at a user's request runs in the mobile device,” including “a web page display mode,” and a “*zoom mode*” in which the device can perform a “zooming function” in response to further inputs. *Id.* [0041], [0043]. Kim describes moving across these modes by, first, in a “selected mode,” detecting “a long press event” for “activating a zoom mode” (*id.*, [0031], [0049]) and transitioning to zoom mode, then, in zoom mode, detecting “a hold event” for “execut[ing] a continuous zoom-in function” (*id.*, [0053], [0061]); and, then, while still in zoom mode, detecting “a double tap event” and “returning to an initial state with a basic display size after a zoom-in or zoom-out action in a zoom mode” (*id.*, [0031]). Kim discloses a separate algorithm for detecting user gestures in selected mode and zoom mode.

1. *User gestures detected via “interrupt” in “selected mode” (i.e., non-zoom mode)*

40. With reference to Figure 2a, Kim discloses detection of user gestures and responsive functions in “selected mode” upon detection of an “interrupt,” which Kim “refers to a signal or instructions, inputted through at least one of a touch screen

and a special function key by a user, to stop the execution of a running application.” EX1004, [0048], FIG. 2a. First, in response to detecting “*a long press input*,” Kim discloses “activating the zoom mode.” *Id.*, [0049]. Alternatively, upon detection of “an interrupt [that] is not a request for the activation of the zoom mode,” “perform[ing] some action in connection with an interrupt.” *Id.*, [0048]-[0050]. But, to be clear, Kim discloses this as a category, not a specific user input or specific corresponding action. *Id.* Kim describes three examples of actions other than activation of zoom mode in response to interrupts that are not a long press: (a) “display[ing] the requested menu” in response to an unspecified input that indicates “a request for a specific menu,” (b) “launch[ing] and enabl[ing] one of an application and a function which is assigned to the selected icon” in response to an unspecified input that indicates “a selection input for a specific icon,” and (c) entering “toggle mode” in response to a “double tap.” EX1004, [0044]-[0045], [0050], [0089].

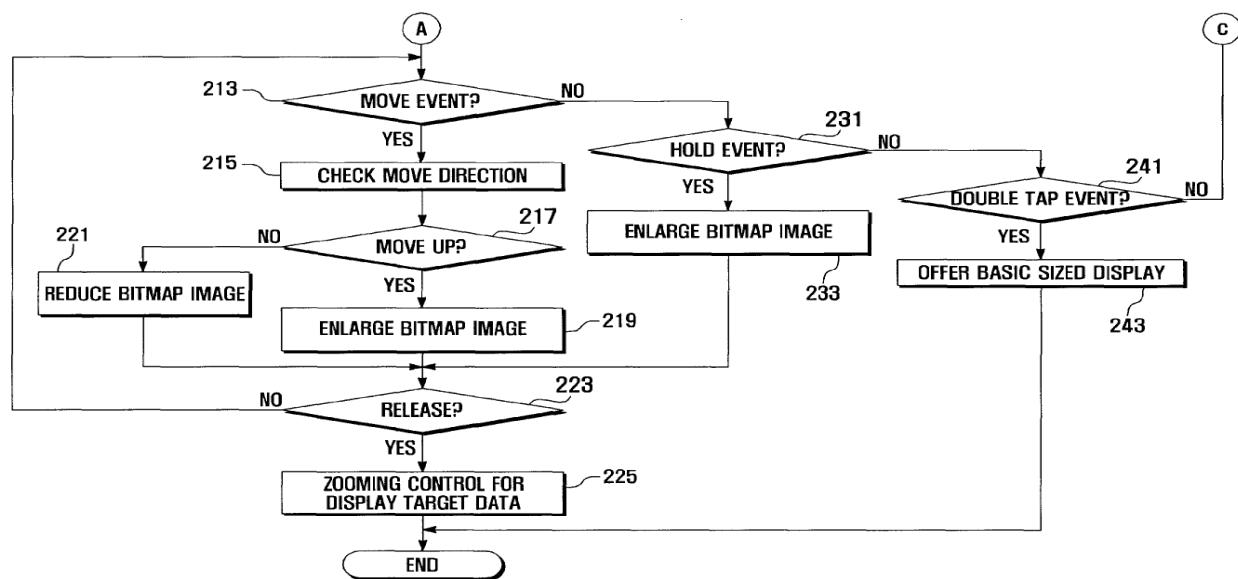
2. User gestures in “zoom mode”

41. Figures 2b and 7 illustrate detection of user gestures and responsive functions in zoom mode. EX1004, [0046]; *see also id.*, [0093] (describing FIG. 7 as illustrating “a process of executing a zooming function depending on a user gesture while a zoom mode is activated”). Specifically, Kim explains that after the mobile

device activates the zoom mode it “waits for a user input, especially based on a gesture.” *Id.*, [0051]; *see also id.*, FIG. 2a (211).

42. Upon detecting a user gesture in the zoom mode, the mobile device “determines *the type* of an input event,” including whether the gesture is “a move event,” “a hold event,” or “a double tap event.” EX1004, [0053] (emphasis added); *see id.*, FIG. 2b (hold event, 231; double tap, 241). That is, Kim teaches—while in a zoom mode—performing a *different* function depending on *the type* of gesture—e.g., whether the gesture is “a move event,” “a hold event,” on one hand or “a double tap event” on the other hand. *See, e.g., id.*, FIG. 2b (231, 241), FIG. 7.

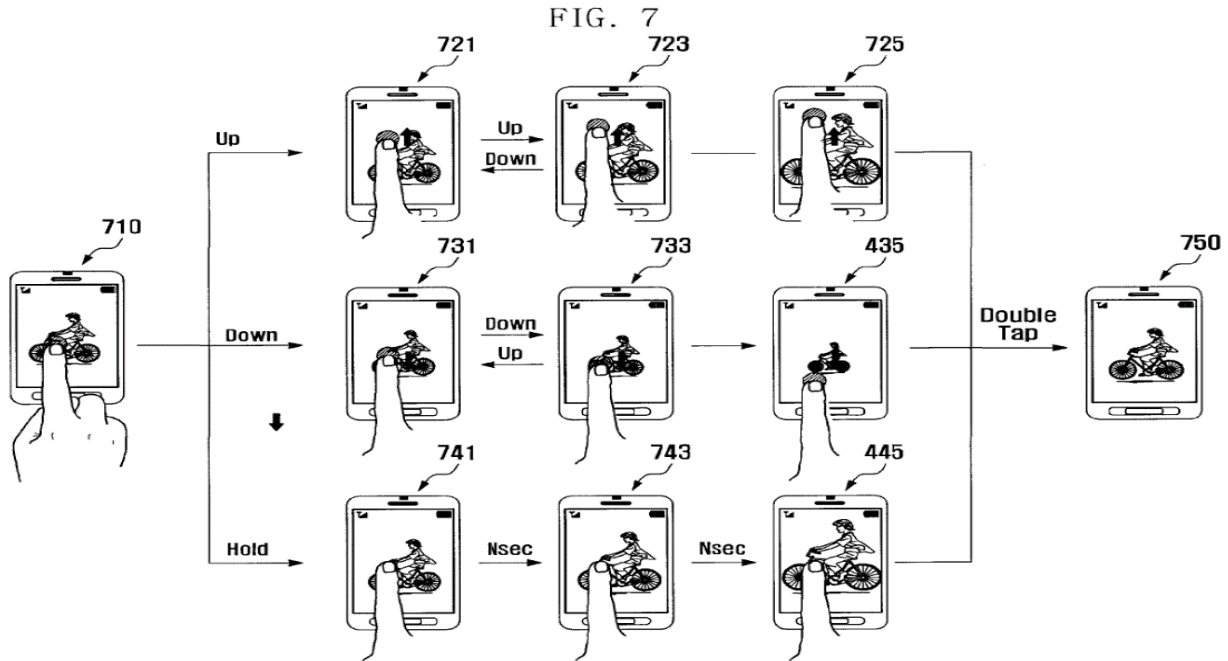
FIG. 2b



EX1004, FIG. 2b.

43. Figure 7 illustrates “perform[ing] a continuous zooming function” through “a hold event” at steps 741, 743, and 745 (*id.*, [0061]–[0063], [0095],

[0104]–[0106]); and “returning to an initial state with a basic display size” via “a double tap event” at step 750 (*id.*, [0031]; *see id.*, [0106]).



EX1004, FIG. 7.

44. Separately, “*thereafter*, a user can invoke a double tap event on the screen.” *Id.*, [0106]; *see also id.*, FIG. 2b (241). “*Then*, in response to the double tap event, the mobile device displays target data with a given basic magnification value, as indicated by the reference number 750.” EX1004, [0106]; *see also id.*, FIG. 2b (243), [0064].

45. Finally, Kim explains that, while in zoom mode, if the detected user gesture does not “correspond[] to” a “move event,” a “hold event,” or “a double tap event,” the mobile device “disregards the received input event and then proceeds to the previous step 211.” EX1004, [0053]; *see id.*, FIGs. 2a, 2b. That is, Kim teaches

disregarding an unrecognized gesture once the device is already in zoom mode. *See id.* A POSITA would not understand this disclosure to refer to a minimum threshold of an intentional user input. Rather, this disclosure merely notes that there may be recognizable.. gestures (e.g., a tap) for which no function is assigned in zoom mode and such gestures are ignored.

B. U.S. Patent Pub. No. 2009/0273571 (“Bowens”)

46. Petitioner does not rely on Bowens to alter the functionality disclosed by Kim. *See* Pet., 53. Rather, Petitioner asserts that “Kim leaves to well-informed POSITAs various specific implementation details pertaining to how the system identifies and differentiates the various touches and gestures” and that Bowens provides those details by describing “various types of user actions and how each is identified.” *Id.*, 52-53. In particular, Bowens discloses a “state machine gesture recognition algorithm for interpreting streams of coordinates received from a touch sensor.” EX1005, Abstract. Bowens discloses using a state machine to recognize gestures including “a tap,” which occurs “when the user quickly touches and releases the touch surface” (*id.*, [0056]); “a double tap,” which occurs “when the user quickly touches and releases the touch surface twice in quick succession” (*id.*, [0057]); and “a press,” which occurs “when the user touches and holds the touch surface” (*id.*, [0058]).

47. Upon detecting a single-finger touch while in an Idle state,¹ the state machine “transition[s] into a Touched state.” *Id.* As soon as the Touched state is entered, “a timeout is started,” which is “used to distinguish between short duration gestures such as . . . taps and long duration gestures such as a press.” EX1007, [0080]; *see also id.*, FIG 1 (“entry/timer(t_{tap})” in “Touched” state). “[I]f the timeout expires” while the user is touching the touch surface, “the state machine . . . generate[s] a press event and then enters the Pressed state.” *Id.* On the other hand, “[i]f the user releases their touch [before the timeout expires], the state machine enters the Second Tap Pending state,” and “[s]ubsequent actions will determine if a tap, double tap, or other gesture is later generated.” EX1007, [0080]. “[I]f the timeout expires” while the user is touching the touch surface, “the state machine . . . generate[s] a press event and then enters the Pressed state.” *Id.* After the release of such a tap, the Second Tap Pending state is entered (*id.* [0080]–[0081]), “a timeout is started” (*id.*, [0081]), and the “initial touch location is stored” (*id.*, [0081]). *Id.* The timeout “is used to decide if the user has made a [single] tap gesture,” whereas the initial touch location “is used to decide if the user is making a double tap gesture.” *Id.* Specifically, if the timeout expires before a second touch is detected,

¹ Bowens discloses an “Idle state,” which “occurs whenever a user is not touching the touch surface.” EX1007, ¶[0079]. Bowens explains that “no actions [are] triggered by entering” the Idle state, and “no actions [are] performed while” in the Idle state. *Id.*

“a [single] tap event is generated and the state machine enters the Idle state.” *Id.* But “if the user touches the surface again before the timeout expires” and “the distance of the second touch from the first” is “less than a specified value,” the state machine “enters the Double Tap Pending state.” *Id.*; *see also id.*, FIG. 1 (“press near tl [touch location]”). Upon entering the Double Tap Pending state, “a timeout is started,” which “is used to decide if the user is making a double tap gesture.” *Id.*, ¶[0082]. Bowens explains that “if the user releases their touch” before the timeout expires, “the state machine generates a double tap event and enters the Idle state.” *Id.*; *see also id.* (A double tap event is generated “because the user completed both taps inside the specified time and distance limits.”). On the other hand, if the timeout expires before the user releases their touch, “it is assumed that the user has tapped and then touched and held the surface,” so “tap and press events are generated and the state machine enters the Pressed state.” *Id.*

C. U.S. Patent Pub. No. 2010/0156818 (“Burrough”)

48. Burrough discloses “a multi-touch touch screen” “and identifying at least one multi-touch gesture based on the data from the multi-touch sensing device and providing an appropriate multi-haptic response.” EX1007, Abstract. Petitioner asserts that “Burrough teaches providing haptic feedback in response to user input, including zooming operations” (Pet., 46), but this is an overgeneralization of Burrough’s disclosure. Rather, the portions of Burrough to which Petitioner cites

disclose providing haptic feedback *during* an ongoing “zoom gesture.” EX1007, [0079]-[0081].

49. Burrough discloses providing haptic feedback to indicate the status of an ongoing zoom gesture where the feedback may change based on the distance traveled and pressure applied by multiple fingers engaging the ongoing zoom gesture. EX1007, [0079]-[0081]. Specifically, Burrough discloses that “[i]f the distance between the two fingers increases (spread[s] apart) at 1110, a zoom-in signal is generated,” and the “zoom-in signal, in turn, causes the haptic devices associated with the two fingers to provide a zoom-in haptic signal.” EX1007, [0080]; *see also id.*, FIG. 11 (1116). That is, Burrough discloses providing haptic feedback “*as* the distance between the two fingers increases [or decreases].” EX1007, [0080] (emphasis added); *see also id.*, [0081] (“In most cases, the amount of zooming and the associated haptic effect varies according to the distance between the two objects” associated with “the set down of the fingers.”), (“[A]s the fingers spread apart or close[] together, the object zooms in or zooms out at the same time and the corresponding haptic effect will change.”).

VIII. OVERVIEW OF THE ’114 PATENT

50. Petitioner challenges eight independent claims of the ’114 Patent: Claims 1, 27, 30, 32, 34, 59, 62, and 64 (“Challenged Claims”). The Challenged Claims recite functionality of apparatuses and method performed at such apparatuses

for detecting gestures on the touch screen and taking various actions “when” / “during” / “based on” / “in response to” aspects of the gesture. The Challenged Claims can be divided into three groups.

A. Claims 1, 32, 34, and 64

51. Claims 1, 32, 34, and 64 each recite “detect[ing] [at least one component of] *a gesture* on the touch screen on the object” and then, in *three instances*, taking different actions “when,” “based on,” or “in response to” “*the* magnitude of [a] / [*the*] duration of *the* gesture being detected” meets the recited criteria of being “less than” or “greater than” a recited threshold. *See* Limitations [1.e], [1.f], [1.g], [1.i], [32.e], [32.f], [32.g], [32.i] [34.f], [34.g], [34.h], [34.j], [64.f], [64.g], [64.h], [64.j].

52. As discussed in Section IX.A.1, the plain language and structure of each claim mandates that: (1) each of the three references to “*the* gesture” must refer to the same gesture, and (2) each of the three references to, first, “a duration of *the* gesture” and, subsequently, “*the* duration of *the* gesture” must refer to a time period beginning at the start of *the* gesture.

B. Claims 27 and 59

53. Claims 27 and 59 each recite “detect[ing] a gesture via the touch screen on the object,” “perform[ing] a first function in a first touch state,” “perform[ing] a second function in a second touch state,” and “[during] / [based on a] detection of at

least a portion of the gesture and based on a change in a duration of the gesture being detected via the touch screen on the object, performing a scale operation.” *See* Limitations [27.e], [27.f], [27.g], [27.h], [59.f], [59.g], [59.h], [59.i].

54. As discussed in Section IX.B, the “first” and “second” “touch state” each refer to “a predefined subset of the range of measurable *contact pressures*” based on the explicit lexicography in the specification. *See also* EX1001, 19:35-41.

C. Claims 30 and 62

55. Claims 30 and 62 each recite “detect[ing] a gesture on the touch screen on the first object,” “[during detection of at least a portion of the gesture before a completion thereof is detected] / [in response to a detection of at least a portion of the gesture], perform[ing] a scale operation, based on a change in a duration of the gesture,” and “[after at least a portion of the scale operation] / [subsequent to the performance of the scale operation], vibrat[ing] the apparatus and perform an action.” Limitations [30.f], [30.g], [30.i], [62.g], [62.h], [62.j].

IX. CLAIM CONSTRUCTION

56. I understand claims are to be given their ordinary and customary meaning to a POSITA in view of the claims, specification, and prosecution history.

A. “Magnitude of [a] / [the] Duration of the Gesture”

57. Each of Claims 1, 32, 34, and 64 recite “detect[ing] [at least one component of] *a gesture* on the touch screen on the object” and then, in *three instances*, taking different actions “when,” “based on,” or “in response to” “*the*

magnitude of [a] / [*the*] duration of *the* gesture being detected” meeting the recited criteria of being “less than” or “greater than” a recited threshold. *See* Limitations [1.e], [1.f], [1.g], [1.i], [32.e], [32.f], [32.g], [32.i] [34.f], [34.g], [34.h], [34.j], [64.f], [64.g], [64.h], [64.j]. Petitioner ignores the plain and ordinary meaning of these words in at least two ways.

58. First, the plain and ordinary meaning of “magnitude of [a] / [the] duration of the gesture” is the magnitude of a period of time beginning at the start of the gesture through the point in time at which the evaluation takes place. That the “duration of [event]” begins at the start of the event is consistent with the plain and ordinary meaning of “duration.” *See* EX2004 (“duration” means “the time during which something exists or lasts”); EX2005 (“duration” means “the time during which something continues”). A period of time beginning at a time other than the start of the gesture is not a “duration of the gesture,” but rather a duration of whatever event began at that other time. Key here, a period of time that begins in the middle of the mapped gesture, such as at the beginning of a later component or sub-step of the gesture, is not the duration of the gesture, but rather the duration of the component of the gesture. *Id.*

59. For example, Petitioner erroneously asserts: “The duration of each of the taps of the double tap gesture is ‘a duration of the gesture.’” Pet., 20. But Petitioner’s own words belie this assertion. The fact that Petitioner was able and

required to specify a different event—“of each of the taps”—to specify a different duration confirms that the specified period is not the duration of the double-tap gesture, but rather two different durations of two components of the gesture. For example, the duration of the second tap begins at a different, later time than the duration of the double-tap gestures—and the duration of the first tap ends while duration of the double-tap gesture continues. *Id.* These are separate periods easily specified. In addition to the words of the Petition quoted above, Claim 32 demonstrates separately using “component of the gesture” and “gesture.” And the claim specifies the gesture, not a component thereof, when referring to the duration: “when a first component of the gesture is detected where a magnitude of a duration of the gesture being detected on the touch screen.” Limitation [32.f].

60. Second, even if it were permissible to interpret the phrase “duration of the gesture” as broad enough to specify the “duration of a component of the gesture,” once doing so in a mapping, the plain and ordinary meaning of “*the* duration of the gesture” requires using the *same* starting point for each of the three recitations of, first, “*a* duration” and, then, twice, “*the* duration.” Here, the plain claim language “*the* duration of *the* gesture” requires Petitioner to identify a common starting point of a common gesture for all three recitations.

61. While a formal construction is likely not necessary given the plain language of the claims, thus it bears noting that *the* duration of *the* gesture in each

claim must be measured from a common starting point at the beginning of a common gesture.

B. “Touch State”

62. Claims 27 and 59 recite a “first function in a first *touch state*” and a “second function in a second *touch state*.” Limitations [27.g], [27.h], [59.g], [59.h].

The ’114 Patent states:

In various embodiments, the contact pressure level may be represented by a touch state. *In the context of the present description, a touch state refers to a predefined subset of the range of measurable contact pressures.* For example, in one embodiment, contact pressure levels may be represented as one of four predefined touch states: no touch, light touch, medium touch, and heavy touch.

EX1001, 19:35-41. Based on this lexicography, “touch state” should be construed as “a predefined subset of the range of measurable contact pressures.”

C. “Inversely Related To”

63. All challenged claims recite “scaling” or “a scale operation” that “includes a reduction in a size such that the size is *inversely related* to the [magnitude of] the duration of the gesture being detected.” Limitations [1.h], [27.h], [30.h], [32.h], [34.i], [59.i], [62.i], [64.i].

64. Patent Owner opposes replacing “related to” with “proportional to.” The plain language of “related to” is not confusing and, to the extent “proportional

to” is different or narrower than “related to,” there is no basis for overriding the plain language.

X. CLAIMS 1, 32, 34, AND 64 (GROUNDS 1A, 1B, 2A, 2B)

A. The Petition Fails to Consistently Map “The Duration” of “The Gesture”

1. *Rather than identify a common gesture for the claims’ “the gesture,” the Petition points to three distinct gestures*

65. Claims 1, 32, 34, and 64 each recite “detect[ing] [at least one component of] *a gesture* on the touch screen on the object” and then, in *three instances*, taking different actions “when,” “based on,” or “in response to” “*the* magnitude of [a] / [*the*] duration of *the* gesture being detected” meets the recited criteria of being “less than” or “greater than” a recited threshold. *See* Limitations [1.e], [1.f], [1.g], [1.i], [32.e], [32.f], [32.g], [32.i] [34.f], [34.g], [34.h], [34.j], [64.f], [64.g], [64.h], [64.j]. The plain language and structure of each claim mandates that: (1) each of the three references to “*the* gesture” must refer to the same gesture, and (2) each of the three references to, first, “*a* duration of *the* gesture” and, subsequently, “*the* duration of *the* gesture” must refer to a time period that in each instance begins at the start of whatever is defined as *the* gesture. *Id.*

66. The Petition’s mapping, which is the same in relevant respects across Grounds 1A, 1B, 2A, and 2B, fails to meet this plain language. Instead, the Petition cites to portions of Kim taking three actions in response to three *different* gestures

associated with three *different* durations beginning at *different* points in time. This does not meet the plain language of the claims for multiple reasons.

67. Kim discloses a number of functions occurring in response to various different gestures, including: (a) “activating the zoom mode” in response an interrupt that “is *a long press input*” (EX1004, [0049]), (b) “perform[ing] some action in connection with an interrupt” upon detection of “*an interrupt [that] is not a request for the activation of the zoom mode*” (EX1004, [0048]-[0050]), (c) when in “zoom mode,” performing “a continuous zoom in function” upon detection of “a *hold event*” (*id.*, [0053], [0061]), and (d) when in “zoom mode,” “inactivat[ing] the zoom mode” and returning to a “predefined individual size” upon detection of a “*double tap event*” (*id.*, [0053], [0064]). Kim itself recognizes that these are different types of gestures. For example, in zoom mode, Kim explains:

If detecting a user *gesture*, namely, if receiving an input event from a user through the touch screen, the mobile device determines the *type of* an input event (steps 213, 231 and 241). That is, the mobile device determines whether an input event is one of a move event (step 213), a hold event (step 231), and a double tap event (step 241).

EX1004, [0053] (cited at Pet., 18). Despite being triggered by different gestures occurring at different points in time, Petitioner maps three of these functions to the claim limitations “perform an operation,” “perform a scaling,” and “perform another operation” all associated with *the* gesture.

68. For Limitation [1.e] and [1.g], Petitioner identifies a long press or “hold event” as corresponding to *the* “gesture on the touch screen on the object” recited in the claims. Pet., 18-20, 21-23. Specifically, the Petition references Kim’s Figure 7 and notes that “Kim describes ‘a continuous zoom-in action depending on a hold event.’” *Id.*, 18-19 (quoting EX1004, [0104]); *see also* Pet., 21 (quoting EX1004, [0104]: “continuous zoom-in action depending on a hold event”). Critically, Kim explains that this “hold event” occurs while the device is in a zoom mode—*i.e.*, after “the mobile device [has] activate[d] the zoom mode in response to a [preceding, different] specific user gesture.” EX1004, [0095].

69. For Limitation [1.f], the Petition then points to a different gesture that occurs only after the “hold event” mapped to Limitations [1.e] and [1.g]—and Kim’s corresponding continuous zoom-in function—is completed. Specifically, for Limitation [1.f], the Petition pivots to Kim’s “double tap event” that “return[s] to an initial state with a basic display size after a zoom-in or zoom-out action.” *See, e.g.*, Pet., 20. Thus, after first pointing to the long press or hold event as the gesture, Petitioner quietly switches to “a double tap” based solely on its collective duration being less than a “first threshold,” “a threshold duration associated with a more persistent gesture (e.g., a hold).” *Id.*

70. Finally, for Limitation [1.i], Petitioner maps to yet another gesture. Pet., 24-26. Specifically, the Petition points to an unnamed gesture that occurs *before* the

device enters the zoom mode: “Kim states that, ‘[i]f an interrupt is not a request for the activation of the zoom mode as the result of determination in step 205, the mobile device can perform some action in connection with an interrupt.’” Pet., 24-25 (quoting EX1004, [0053]). Because this third gesture only happens when Kim’s mobile device is not in the zoom mode, this third gesture can **never** be the same as either of the “hold event” gesture mapped to Limitations [1.e] and [1.g] or the “double tap” gesture mapped to Limitation [1.f]. The Petition explicitly recognizes as much, in that this third gesture would be “shorter than the duration necessary for a long press threshold [to enter Kim’s zoom mode, a necessary predicate to the separate “hold event” gesture mapped to Limitations [1.e] and [1.g]], and a **different gesture** than a double tap gesture [mapped to Limitation [1.f]].” Pet. 26 (citing EX1003, ¶64).²

71. Setting aside the respective durations of these different gestures, the Petition’s mapping violates the plain claim language, which requires **the** gesture of

² For Ground 2, the Petition points to a “tap gesture” for “activating a hyperlink,” citing only to Bowens, not Kim. Pet., 67-68. The Petition does not explain when or where this functionality would be used in the “Kim-Bowens-Device.” *Id.*, 53-62. But Kim explains that the gestures recognized during “zoom mode” are “move,” “hold,” and “double-tap,” and “[i]f the input event corresponds to none of them, the mobile device disregards the received input event.” EX1004, [0064]. Thus, a “tap” user input that causes activating a hyperlink could only occur when Kim’s mobile device is not in the zoom mode. *Id.* Thus, this third gesture as mapped in Ground 2 likewise can **never** be the same as either of the “hold event” gesture mapped to Limitations [1.e] and [1.g] or the “double tap” gesture mapped to Limitation [1.f].

Limitation [1.i] to be the *same* gesture as evaluated in Limitation [1.f] to “perform an operation” and in Limitation [1.g] to “perform a scaling.”

72. Thus, the Petition fails to map to any single gesture in Kim to each of Claim 1’s “a gesture” [1.e], “the gesture” [1.f], “the gesture” [1.g], and “the gesture” [1.i]. The Petition expressly confirms that its mapping relies on different gestures. Pet. 26 (“a gesture that is . . . shorter than the duration necessary for a long press threshold, and a different gesture than a double tap gesture”), 61 (“the device would . . . receive different types of input gestures, per Kim and Bowens, and would leverage Bowens’ teachings regarding the implementation details of how to distinguish between the *different gestures* to ultimately perform the respective operation” (emphasis added)), 62 (“like Kim, Bowens teaches a device that recognizes and generates events for *different gesture* inputs, such as a tap, a press, and a long press” (emphasis added)).

2. *Rather than identify a common duration for the claims’ “the magnitude of the duration,” the Petition points to three distinct durations that can never even overlap*

73. For Limitations [1.e] and [1.g], the Petition references Kim’s Figure 7 and notes that “Kim describes ‘a continuous zoom-in action depending on a hold event.’” *Id.*, 18-19 (quoting EX1004, [0104]); *see also* Pet., 21 (quoting EX1004, [0104]: “continuous zoom-in action depending on a hold event”). For duration, the Petition asserts that a “POSITA would have understood that Kim’s long press would

be discriminated from a normal press based on the contact being maintained (without moving) for longer than a threshold duration.” Pet., 22 (citing EX1004, [0140]; EX1003, ¶59). Setting aside for the moment whether the Petition at all supports its threshold assertion, comparing this first gesture to the asserted threshold depends on a duration that begins only after Kim’s device enters the zoom mode, at the start of the “long press” or “hold event.” *See, e.g.*, EX1004, [0051]-[0053].

74. For Limitation [1.f], the Petition pivots to Kim’s “double tap event” that “return[s] to an initial state with a basic display size **after a zoom-in or zoom-out action.**” *See, e.g.*, Pet., 20 (emphasis added). For the duration of this second gesture, the Petition asserts that the double tap “comprises two short duration taps in quick succession, which individually and collectively have a duration shorter than a threshold duration associated with a more persistent gesture (e.g., a hold).” Pet., 20 (citations omitted). However, because this “double tap” gesture occurs only *after* completion of the first gesture (the “long press” or “hold event” that causes the continuous zoom-in event), the alleged duration of the “double tap” gesture cannot possibly overlap with the duration of the first “long press” or “hold event” gesture.

75. Finally, for Limitation [1.i], the Petition points to an unnamed gesture that occurs *before* the device enters the zoom mode: “Kim states that, ‘[i]f an interrupt is not a request for the activation of the zoom mode’” Pet., 24-25 (quoting EX1004, [0053]). Because this third gesture can only happen *before* Kim’s

mobile device enters the zoom mode (during which the first and second identified gestures occur), the duration of this third gesture necessarily ends before either of the first (“long press” or “hold event”) or second (“double tap”) gestures can begin.

76. The Petition therefore relies on three distinct durations that not only lack a common starting point, but never even partially overlap. Thus, setting aside that these are different gestures, the Petition’s mapping violates the plain claim language, which requires *the* duration of Limitation [1.i] to be the *same* duration as evaluated in Limitation [1.f] to “perform an operation” and in Limitation [1.g] to “perform a scaling.” See Section IX.A.

3. These “gesture” and “duration” defects are present in all grounds for all of claims 1, 32, 34, and 64

77. As explained above for Claim 1 in Ground 1A, these defects in Petitioner’s mappings are also present for Claim 1 in Ground 2A. See Pet., 62 (for Limitation [1.e], referencing Ground 1A Limitation [1.e] and adding that Bowen teaches “different gesture inputs, such as a tap, a press, and a long press”), 64-66 (for Limitation [1.g], also identifying a “long press” as the gesture for a continuous zoom-in function when Kim’s device is in its zoom mode), 62-64 (for Limitation [1.f], also identifying a “double tap” as the gesture to return to normal zoom state *after* completion of Kim’s “long press” and corresponding continuous zoom-in function), 67-68 (for Limitation [1.i], identifying a “tap” gesture, again, prior to Kim’s device entering its zoom mode).

78. These defects in Petitioner's mappings are also present for:

- **Claim 32** in Grounds 1A and 2A. *See* Pet., 38 (for Ground 1A Limitation [32.e], referencing Ground 1A Limitation [1.e]), 39 (for Ground 1A Limitation [32.f], referencing Ground 1A Limitation [1.f]), 39-40 (for Ground 1A Limitation [32.g], referencing Ground 1A Limitation [1.g]), 41 (for Ground 1A Limitation [32.i], referencing Ground 1A Limitation [1.i]), 75-76 (for Ground 2A Limitation [32.e], referencing Ground 1A Limitation [32.e]), 76-77 (for Ground 2A Limitation [32.f], referencing Ground 2A Limitation [1.f]), 77-78 (for Ground 2A Limitation [32.g], referencing Ground 2A Limitation [1.g]), 78-79 (for Ground 2A Limitation [32.i], referencing Ground 2A Limitation [1.i]);
- **Claim 34** in Grounds 1B and 2B. *See* Pet., 43 (for Ground 1B Limitations [34.b]-[34.j], referencing Ground 1A Limitations [1.a]-[1.i]), 80 (for Ground 2B Limitations [34.b]-[34.j], referencing Ground 2A Limitations [1.a]-[1.i]); and
- **Claim 64** in Grounds 1B and 2B. *See* Pet., 44 (for Ground 1B Limitations [64.e]-[64.j], referencing Ground 1A Limitations [32.d]-[32.i]), 80 (for Ground 2B Limitations [64.e]-[64.j], referencing Ground 2A Limitations [32.d]-[32.i]).

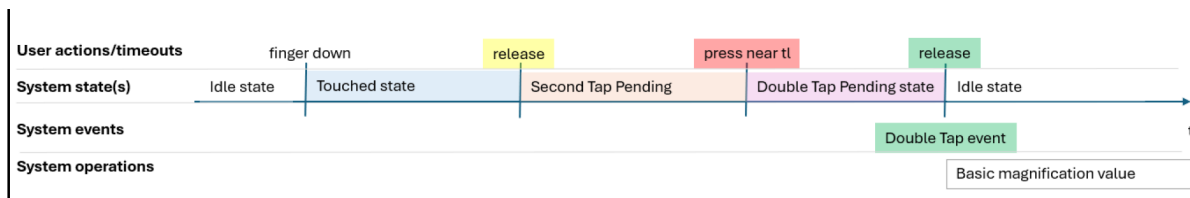
Thus, the Petition fails to show a reasonable likelihood of success for any of Claims 1, 32, 34, and 64.

B. The Petition Fails to Demonstrate that Performance of the Mapped “Operation / Function” Occurs “When” / “Based On” / “In Response To” “a Duration of the Gesture” “is Less Than A First Magnitude Threshold”

79. Claims 1, 32, 34, and 64 each recite “perform[ing] an [operation] / [function]” “[when] / [based on] / [in response to]” “a magnitude of a duration of the gesture being detected on the touch screen ... is less than a first magnitude threshold.” Limitation [1.f], [32.f], [34.g], [64.g]. Petitioner maps “returning to an initial state with a basic display size after a zoom-in or zoom-out action” to the claimed “perform[ing] an operation.” *See, e.g.,* Pet., 20. Petitioner asserts that the two taps of the “double tap event” “collectively have a duration shorter than a threshold duration associated with a more persistent gesture (e.g., a hold).” *Id.* Petitioner thus defines “*the gesture*” as “a double tap” and the “first threshold” as “a threshold duration associated with a more persistent gesture (e.g., a hold).” *Id.* Having so defined *the* gesture, Petitioner’s own explanation confirms that neither Kim nor Kim-Bowens detect a “double tap” gesture based on the duration *of that double-tap gesture* being less than a “hold” threshold.

80. As explained above in Section VII.B, Bowens discloses determining that a double-tap occurred by passing through a number of states, each associated with a different threshold and analysis. EX1007, [0080]–[0082]; *see also id.*, FIG.

1. Indeed, the Petition’s own illustration confirms that recognizing a “double tap event” requires passing, in order, through three states:



Pet., 64 (citing EX1003, ¶190).

81. Petitioner asserts that this sequence is sufficient to meet the claim language because “the release must occur before the ‘timeout/ tap, press’ transition from the Double Tap Pending state to the Pressed state.” *Id.*, 63. But, by its own words, this is a measure of the time (duration) spent in the “Double Tap Pending state,” not the duration *of the double-tap gesture*, which began on the “finger down” when exiting the “Idle state” several states earlier. That does not meet the claim language. *See* Section IX.A. Indeed, the Petition itself acknowledges that to make this argument it is re-defining the gesture: “*The duration of each of the taps* of the double tap gesture is ‘a duration of the gesture.’” Pet., 63. As explained in Section IX.A, “the duration of a tap” is not “the duration of *the gesture*”—it is, at best, the duration of a component of the gesture. To excuse this failure to map the claim language, Petitioner asserts that a “POSITA would have understood that gesture recognition encompasses identification of multiple components of touch data.” Pet., 63. Accepting that assertion as true, it does not follow that Petitioner is free to ignore

the plain language of the claimed “duration *of the gesture*” and replace it with “duration *of a component of the gesture.*” The Petition has no issue using different words to describe these two concepts. Nor do the Challenged Claims. For example, Claim 32, in portions of the claim other than those at issue here, refers to “a first component of the gesture,” “a second component of the gesture,” and “a third component of the gesture,” but for this disputed element refers to “*the* duration of *the* gesture.” Limitations [32.f], [32.g], [32.i]. Petitioner is not free to ignore this language.

C. The Petition Fails To Demonstrate That Performance of the Mapped “Another Operation / Function” Occurs “When” / “Based On” / “In Response To” “the Duration of the Gesture Being Detected” “is Greater Than a Second Magnitude Threshold”

82. Claims 1, 32, 34, and 64 each recite “perform[ing] another [operation] / [function]” “[when] / [based on] / [in response to]” “the magnitude of the duration of the gesture being detected on the touch screen ... is greater than a second magnitude threshold.” Limitation [1.i], [32.i], [34.g], [64.g]. As an initial matter, despite describing Bowens as merely adding implementation details to Kim, Petitioner provides different mappings of this element for Grounds 1 (Kim) and 2 (Kim-Bowens). For Ground 1, Petitioner maps the claimed “perform[ing] another [operation] / [function]” to “‘perform[ing] other action’ (e.g., display[ing] requested menu)” “when the magnitude of the duration of the gesture is greater than a second magnitude threshold—specifically, a minimum threshold to be deemed an

intentional touch.” *See, e.g.*, Pet., 24-26. Thus, for Ground 1, Petitioner maps the “another [operation] / [function]” to an unspecified group of functions including “display[ing] the requested menu” and maps the “second magnitude threshold” to “a minimum threshold to be deemed an intentional touch.” *Id.* For Ground 2, Petitioner identifies “perform[ing] another operation (activating the hyperlink)” when “the ‘timeout/tap’ transition from SecondTapPending to Idle” is reached. *See, e.g.*, Pet., 67-68. Thus, for Ground 2, Petitioner maps the “another [operation] / [function]” to “activating the hyperlink” and maps the “second magnitude threshold” to exceeding a “timeout/tap” threshold measured from the release of a first tap waiting to see if a second tap occurs. *Id.* Neither mapping meets the plain language of the claims.

1. Ground 1 Mapping

83. The Petition asserts: “a POSITA would have understood that, for the detected interrupt (step 203) to be sufficient to cause the mobile device to ‘perform other action’ (step 207), a magnitude greater than a minimum threshold value (e.g., the minimum threshold of an intentional user input) is relied upon, or rendered obvious, by Kim.” Pet., 25-26. Setting aside that “perform other action” does not identify any specific action or any specific user gesture and that Kim does not reference or suggest utilizing a “minimum threshold of an intentional user input,” the Petition’s description of the mapping confirm it does not meet the claim.

84. The Petition asserts that “an interrupt would be caused by a gesture that is longer in duration than the second threshold” of “the minimum threshold of an intentional user input.” Pet., 26. That is, with reference to FIG. 2a, the Petition asserts that a duration exceeding the mapped threshold causes *step 203 “Detect Interrupt.”* *Id.*; EX1004, FIG. 2a. But the Petition does not map the claimed “another [operation] / [function]” to step 203; it maps it to *step 207 “performs other action” (e.g., display requested menu).* And, Kim is clear that steps 203 and 207 do not occur simultaneously nor when / based on / in response to the same event. Rather, “[a]fter detecting an interrupt, the mobile device” further analyzes the user gesture, determining “whether an interrupt is a request for activating the zoom mode (step 205)” and, if not, whether it is a request for some other action (step 207). EX1004, [0049]-[0050].

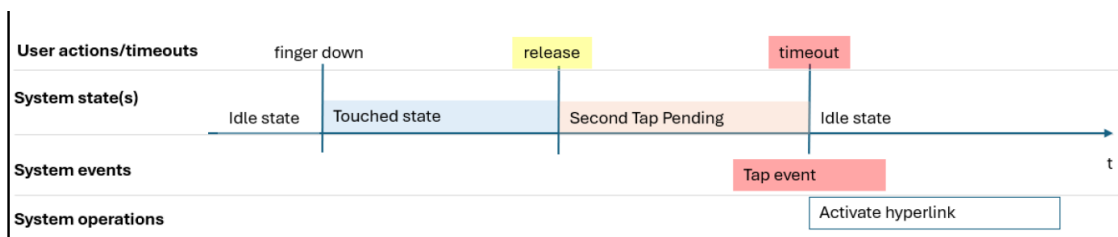
85. The claims require not just determining that “the magnitude of the duration of the gesture being detected on the touch screen ... is greater than a second magnitude threshold,” but “[when] / [based on] / [in response to]” that determination “perform[ing] another [operation] / [function].” Limitation [1.i], [32.i], [34.g], [64.g]. Here, the Petition alleges only that Kim’s mobile device simply determines there has been an interrupt “[when] / [based on] / [in response to]” a determination that “a minimum threshold of an intentional user input” has been met.

Pet., 24-26. The Petition alleges only exceeding that threshold is required to detect an “interrupt.” *Id.* This does not meet the claims.

2. Ground 2 Mapping

86. For Ground 2, Petitioner maps the “another [operation] / [function]” to “activating the hyperlink” based on “the gesture” being “identified as a tap” and maps the “second magnitude threshold” to exceeding a “timeout/tap” threshold measured from the release of a first tap waiting to see if a second tap occurs. *See, e.g.,* Pet., 67-68. Having so defined *the* gesture as “a tap gesture,” Petitioner’s own explanation confirms the duration and threshold it identifies is not the duration *of that tap gesture*.

87. As explained above in Section VII.B, Bowens discloses determining that a single tap gesture is detected by, first, detecting a finger down and then a “release” and then waiting in a “second tap pending state” to determine if a second tap occurs (which would rule out a single tap event). EX1007, [0080]–[0082]; *see also id.*, FIG. 1. The Petition’s own illustration shows this sequence:



Pet., 68 (citing EX1003, ¶195).

88. Having established “*the* gesture” as a “tap gesture,” Petitioner must, then, demonstrate that the system takes action based on “the magnitude of *the* duration of *the*” tap gesture being “greater than a second magnitude threshold.” *See, e.g.,* Limitation [1.i]. The Petition does not even purport to do so. Petitioner confirms that the “tap gesture” “*ceased* at the time labeled ‘release,’ highlighted yellow” in the figure above. Pet., 67-68. Yet, Petitioner then focuses on a period of time *beginning after the tap gesture has ceased* labeled “Second Tap Pending.” *Id.* Petitioner points to the duration *beginning* at “release” when *the* tap gesture has ceased and continuing until exceeding “a second magnitude (the “timeout/tap” transition from SecondTapPending to Idle).” *Id.* This period is, by the Petition’s own admission, not *the* duration of *the* tap gesture as the claim language requires, but rather a duration of a period that begins after the tap gesture ends. This does not meet the plain language of the claims. *Id.* Rather, it appears to be an attempt to rewrite “*the* duration of *the* gesture” to refer to any duration of any period used to identify a gesture. As discussed in Section IX.A, the plain language of the claims does not permit such a rewrite.

XI. CLAIMS 27 AND 59 (GROUNDS 1A, 1B, 2A, 2B)

A. The Petition Fails to Identify a “First” or “Second” “Touch State” As Properly Construed

89. Claims 27 and 59 recite “perform[ing] a first function in a first touch state” and “perform[ing] a second function in a second touch state.” Limitations

[27.f], [27.g], [59.g], [59.h]. As discussed in Section IX.B, “touch state” should be construed as “a predefined subset of the range of measurable *contact pressures*” based on the explicit lexicography in the specification. *See also* EX1001, 19:35-41. Petitioner presents two alternative mappings for each of Grounds 1 and 2, but does not identify any “touch states” corresponding to “a predefined subset of the range of measurable *contact pressures*” in each mapping. *See, e.g.,* Pet., 26-29, 32-35, 44 (pointing to Ground 1A for Ground 1B), 69-79, 80 (pointing to Ground 2A for Ground 2B).

90. In a first mapping for Ground 1, Petitioner equates “touch states” to “different modes” in Kim. *Id.*, 26. Kim maps the “first touch state” to “when not in the ‘zoom mode’ state, or in ‘toggle mode’” and the “second touch state” to when in “zoom mode.” *Id.*, 27-28. Petitioner does not assert that any of the “modes” in Kim have anything to do with a particular range of contact pressure, nor do they. *Id.*, 26-29. Indeed, the Petition does not use the word “pressure.” Pet., 26-29.

91. In a second mapping for Ground 1, “each claimed ‘touch state’ is mapped to a particular user input and its corresponding function.” Pet., 32. Petitioner maps the “first touch state” to a “continuous move up event” and the “second touch state” to a “press and hold.” *Id.*, 33-34. But Petitioner does not assert that either of these user inputs have anything to do with a particular range of contact pressure, nor do they. *Id.*, 32-34. Indeed, the Petition does not use the word “pressure.” Pet., 32-

34. Nor does Kim associate either of the identified “user inputs” with contact pressure. *See* Section VII.A. Rather, a “move up” user input relates to a touch moving up the touch screen. EX1004, FIG. 7. And, Petitioner asserts elsewhere that a “press and hold” user input is based on “the magnitude of *the duration* of the gesture being detected on the touch screen on the object is greater than the first magnitude threshold.” Pet., 21.

92. In a first mapping for Ground 2, Petitioner maps the “first touch state” to Bowens’ “Second Tap Pending” state, and the “first function” to “activating a hyperlink,” per Bowens and Kim. Pet., 69.

93. In a second mapping for Ground 2, Petitioner maps both the “second touch state” and the “second function” in the alternative. *Id.*, 69–70. First, Petitioner maps the “second touch state” to Bowens’ “Idle” state, and the “second function” to “display[ing] target data with a given basic magnification value,” per Kim. *Id.*, 69. Alternatively, Petitioner maps the “second touch state” to Bowens’ “Repeat Pending” state, and the “second function” to “perform[ing] [a] continuous scaling,” per Kim. *Id.*, 69–70. Again here, Petitioner does not assert that either Bowens’ touch states or Kim’s functions have anything to do with a particular range of contact pressure, nor do they. *Id.*, 69–70. Indeed, the Petition does not use the word “pressure.” Pet., 69–70. Nor does Kim or Bowens associate either the alleged touch states or alleged functions with contact pressure. *See* Section VII.A and VII.B.

94. Accordingly, Petitioner fails to demonstrate Kim discloses either a first or second “touch state,” properly construed as “a predefined subset of the range of measurable contact pressures.”

XII. CLAIMS 30 AND 62 (GROUNDS 1C, 1D, 2C, 2D)

A. The Petition Fails to Identify an Evidentiary Basis to Add Haptic Feedback to Kim’s Double Tap Gesture

95. Claim 30 recites “after at least a portion of the scale operation, vibrate the apparatus and perform an action.” Limitation [30.i]. Claim 62 recites “subsequent to the performance of the scale operation, vibrating the apparatus and performing an action.” Limitation [62.j]. Petitioner maps “the scale operation” to Kim’s “continuous zoom-out function” responsive to a “press and hold” gesture. *See, e.g.*, Pet., 50 (for Limitation [30.h], referring to mapping of Limitation [32.h]), 40 (for Limitation [32.h], referring to mapping of Limitation [1.h]), 23-24. Petitioner maps “performing an action” to “display[ing] data with a given basic magnification” (i.e., returning to default zoom level) responsive to a subsequent “double tap” user input after the conclusion of “the scale operation.” Pet., 50.

96. The Petition maps “the scale operation” to Kim’s “continuous zoom-out function” responsive to a “press and hold” gesture. *See, e.g.*, Pet., 50 (for Limitation [30.h], referring to mapping of Limitation [32.h]), 40 (for Limitation [32.h], referring to mapping of Limitation [1.h]), 23-24.

97. The Petition then maps “performing an action” to “display[ing] data with a given basic magnification” (i.e., returning to default zoom level) responsive to a subsequent “double tap” user input after the conclusion of “the scale operation.” Pet., 50.

98. The Petition does **not** assert that Kim discloses vibrating the apparatus upon recognition of a double tap user input or at any other time. *Id.* Rather, the Petition asserts it would have been obvious for a POSITA to add haptic feedback, as taught by Burrough, upon recognition of the double tap user input. Pet., 50 (Ground 1), 82-83 Ground 2). But even accepting Petitioner’s proposal to add Burrough’s haptic feedback to Kim, doing so would not result in adding haptic feedback upon recognition of a double tap user input.

99. Petitioner asserts that “Burrough teaches providing haptic feedback in response to user input, including zooming operations” (Pet., 46), but this is an overgeneralization of Burrough’s disclosure. In the section Petitioner cites, Burrough discloses detecting a “zoom gesture” and providing haptic feedback **during** and ongoing “zoom gesture,” EX1007, [0079]-[0081]. “If the distance between the two fingers increases (spread apart),” “a zoom in signal is generated.” *Id.*, [0080]. “The zoom-in signal, in turn, causes the haptic device associated with the two fingers to provide a zoom-in haptic signal,” which “can be, for example, faster (or slower) or more intense (or less intense) vibration as the distance between

the two fingers increase.” *Id.* Additionally, “the vibro-tactile response for the two fingers can be different due to the varying pressure applied by each finger.” *Id.*, [0079].

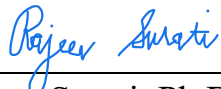
100. Burrough, thus, discloses providing haptic feedback **during** an ongoing zoom gesture, for example, involving the distance traveled and pressure applied by multiple fingers engaging the ongoing zoom gesture. *Id.*, [0079]-[0081]. Kim’s double-tap user input gesture meets none of these criteria. It does not involve an ongoing zoom operation, much less ongoing changing movement or ongoing changing pressure. *Id.* Rather, upon detection of the double-tap, Kim instantaneously returns to the “basic magnification” level. There is no ongoing zoom operation upon recognition of Kim’s double tap. EX1004, [0106]. Nor is there any reason to provide feedback through haptic feedback because the screen instantaneously provides visual feedback by returning to the “basic magnification” level. Thus, even if a POSITA were motivated to apply Burrough’s disclosure to Kim, Burrough’s teachings would at most suggest adding haptic feedback **during** a continuous zoom-in or continuous zoom-out operation, but not upon recognition of a double-tap user input gesture.

XIII. CONCLUSION

101. All statements made herein of my own knowledge are true, all statements made herein on information and belief are believed to be true, and these statements were made with the knowledge that willful false statement and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001.

Respectfully submitted,

Dated: October 18, 2024



Rajeev Surati, Ph.D.