Andrew Wolfe Ph.D.

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Education:

Ph.D. in Electrical and Computer Engineering, Carnegie Mellon University, 1992
Visiting Graduate Student, Center for Reliable Computing, Stanford University, 1988-1989
M.S. in Electrical and Computer Engineering, Carnegie Mellon University, 1987
B.S.E.E. in Electrical Engineering and Computer Science, The Johns Hopkins University, 1985

Recent Employment:

Lecturer, [September 2013-present]
Santa Clara University

Teaching graduate and undergraduate courses on embedded computing, mechatronics, real-time systems, computer architecture, design, and community service. Faculty Senate President 2023-24.

Consultant, [October 2002-present]
Wolfe Consulting

Consultant on processor technology, computer systems, consumer electronics, software, design tools, and intellectual property issues. Testifying and consulting expert for IP and other technology-related litigation matters.

Sample clients include:

Google	Apple	Samsung
Sony	Huawei	HTC
AT&T	Verizon Mobile	T-Mobile
IBM	Motorola/Lenovo	Nintendo
Activision	AMD	Western Digital
Sonos	Qualcomm	LG
Netflix	Roku	Tivo
Synaptics	Sawstop	3M
Medigus	TCL	ZTE
Egnyte	Acer	Waymo

Chief Technical Officer, [1999-2002]; Sr. VP of Business Development, [2001-2002]; VP, Systems Integration, S3 Fellow , [1998 – 1999]; Director of Technology, S3 Fellow , [1997 - 1998]
SONIC|blue, Inc, Santa Clara, CA (formerly S3 Inc.)

Strategic Business Development:
Developed and implemented strategy to reposition S3 from PC graphics into the leading networked consumer electronics company.

- Acquired Diamond Multimedia and coordinated integration of communications, Rio digital music, and workstation graphics divisions into S3.
- Identified and negotiated acquisitions to grow digital media businesses including Empeg, ReplayTV, and Sensory Science.
- Identified and negotiated strategic investments including Comsilica, Intellon, KBGear Interactive, Entridia, DataPlay and others.

- Developed strategy for integrated graphics/core-logic products and established a joint venture with Via Technologies to design and market these products.
- Negotiated divestiture of graphics chip business to Via and the workstation graphics division to ATI.

Product Planning and Development:

- Drove roadmap development within SONICblue product divisions.
- Managed Business Development for all product lines.
- Led New Product Development and Corporate Vision processes.
- Acting co-General Manager of Rio digital music business in 2nd half of 2001. Responsible for all areas of product development, business development, and cost management.
- Managed development of the Savage/MX and Savage/IX mobile 3D graphics accelerators and Savage/NB system logic products.

Public Relations, Public Policy and Investor Relations:

- Present company products and strategy at industry events such as CES, Comdex, and Microprocessor Forum.
- Discuss new products and initiatives with the press.
- Promote issues of interest to SONICblue to industry groups and in Washington.
- Brief analysts, and investors on company progress. Participate in quarterly conference calls.

IP Management and Licensing:

- Negotiated and managed partnership agreements including a critical cross-licensing agreement with Intel.
- Renegotiated technology-licensing agreements with IBM for workstation graphics products.
- Evaluated outside technology opportunities, managed video research and development, and managed corporate IP strategy with legal staff including patent filings, cross licensing, and litigation.

Consulting Professor , [1999-2002]
Stanford University, Stanford, CA

Teaching computer architecture and microprocessor design.

Assistant Professor [1991 - 1997]
Princeton University, Princeton, NJ

Teaching and research in the Electrical Engineering department. Research in embedded computing systems, multimedia, video signal processors, compiler optimization, and high performance computer architecture. Principal investigator or project manager for ~$6M in funded research.

Visiting Assistant Professor , [1992]
Carnegie Mellon University, Pittsburgh, PA

Research and preparation of teaching materials on advanced microprocessor designs including new superscalar and superpipelined processor architectures.

Founder and Vice President and Consultant, [1989 - 1995]
The Graphics Technology Company, Inc., Austin, TX

Founded company to develop touch-sensitive components and systems for the first generation of PDA devices and interactive public systems. Obtained financing from Gunze Corp., Osaka, Japan. Company is now part of 3M.

Senior Electrical Engineer, [1989]
ESL - TRW, Advanced Technology Division, Sunnyvale, CA

Designed the architecture for an Intel i860-based multiple-processor digital signal processing system for advanced military applications. Designed several FPGA interface chips for VME-bus systems.

Design Consultant, [1986 -1987]
Carroll Touch Division, AMP Inc., Round Rock, TX

Developed several new technologies for touch-screen systems. Designed the first ASIC produced for AMP, a mixed-signal interface chip for controlling touch-screen sensors. Developed the system electronics, system firmware, and customer utility software for numerous products including those based on the new ASIC.

Senior Design Engineer, [1983 -1985]
Touch Technology Inc., Annapolis, MD

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Advisory Boards:

Director, Turtle Beach Corporation (NASDAQ:HEAR) (formerly Parametric Sound Corporation), KBGear Interactive, Inc., Comsilica, Inc., Rioport.com, various S3 subsidiaries.

Technical Advisory Boards, Ageia, Inc., Intellon, Inc., Comsilica, Inc., Entridia, Inc., Siroyan, Ltd., BOPS, Inc, Quester Venture Funds

Carnegie Mellon University Silicon Valley Advisory Board; Johns Hopkins University Tech Transfer Advisory Board

Awards:

IEEE Fellow - for contributions in hardware code compression of embedded software, power consumption analysis, and optimization, 2022
IEEE Computer Society Distinguished Contributor - 2021
Micro Test-of-Time Award (in recognition of one of the ten most influential papers of the first 25 years of the symposium), 2014
Business 2.0 "20 Young Executives You Need to Know", 2002
Walter C. Johnson Prize for Teaching Excellence, 1997.
Princeton University Engineering Council Excellence in Teaching Award, Spring 1996
AT&T/Lucent Foundation Research Award, 1996.
Walter C. Johnson Prize for Teaching Excellence, 1995
IEEE Certificate of Appreciation, 1995, 2001.
AT&T Foundation Research Award, 1993.
Semiconductor Research Corporation Fellow, 1986 - 1991.
Burroughs Corporation Fellowship in Engineering, 1985 - 1986.

Professional Activities:

Program Chair: Micro-24, 1991, Hot Chips 13, 2001.

General Chair: Micro-26, 1993, Micro-33, 2000.

Associate Editor: IEEE Computer Architecture Letters; ACM Transactions in Embedded Computing Systems

Speaker at CES, WinHec, Comdex, Intel Dev. Forum, Digital Media Summit, Microprocessor Forum, etc.

Keynote speaker at Micro-34, ICME 2002

IEEE B. Ramakrishna Rau Award committee – 2012-2016

IEEE Computer Society Awards Committee – 2015

Director – IEEE Consultants Network of Silicon Valley – 2022-present

CES Awards Judge – 2016

Entrepreneurship Mentor – Draper University

Over 50 refereed publications.

Publications since January 2006:

Wolfe, A., "Retrospective on Code Compression and a Fresh Approach to Embedded Systems", IEEE MICRO, July/Aug. 2016, Invited paper.

Patents:

U.S. Pat. 5,041,701 – *Edge Linearization Device for a Contact Input System*, Aug. 20, 1991.
U.S. Pat. 5,438,168 – *Touch Panel*, Aug. 1, 1995.
U.S. Pat. 5,736,688 – *Curvilinear Linearization Device for Touch Systems*, Apr. 7, 1998.
U.S. Pat. 6,037,930 – *Multimodal touch sensitive peripheral device*, March 14, 2000.
U.S. Pat. 6,408,421 – *High-speed asynchronous decoder circuit for variable-length coded data*, June 18, 2002.
U.S. Pat. 6,865,668 – *Variable-length, high-speed, asynchronous decoder circuit*, March 8, 2005
U.S. Pat. 7,079,133 – *Superscalar 3D Graphics Engine*, July 18, 2006
EP 1 661 131 B1 – *PORTABLE ENTERTAINMENT APPARATUS*, Jan. 21, 2009
U.S. Pat. 7,555,006 – *Method and system for adaptive transcoding and transrating in a video network*, June 30, 2009
U.S. Pat. 7,996,595 – *Interrupt Arbitration for Multiprocessors*, Aug. 9, 2011
EP 2 241 979 B1 – *Interrupt Arbitration for Multiprocessors*, Oct. 10, 2011
U.S. Pat. 8,131,970 – *Compiler Based Cache Allocation*, March 6, 2012
U.S. Pat. 8,180,963 – *Hierarchical read-combining local memories*, May 15, 2012
U.S. Pat. 8,193,941 – *Snoring Treatment*, June 5, 2012
U.S. Pat. 8,203,541 – *OLED display and sensor*, June 19, 2012
U.S. Pat. 8,243,045 – *Touch-sensitive display device and method*, August 14, 2012
U.S. Pat. 8,244,982 – *Allocating processor cores with cache memory associativity*, August 14, 2012
U.S. Pat. 8,260,996 – *Interrupt Optimization for Multiprocessors*, Sept. 4, 2012
101185761 (KR) – *Noise Cancellation for Phone Conversation*, Sept. 19, 2012
101200740 (KR) – *OLED display and sensor*, November 7, 2012
101200741 (KR) – T*ouch-sensitive display device and method*, November 7, 2012
U.S. Pat. 8,321,614 – *Dynamic scheduling interrupt controller for multiprocessors*, Nov. 27, 2012
U.S. Pat. 8,352,679 – *Selectively securing data and/or erasing secure data caches responsive to security compromising conditions*, Jan. 8, 2013
U.S. Pat. 8,355,541 – *Texture Sensing*, Jan. 15, 2013
U.S. Pat. 8,370,307 – *Cloud Data Backup Storage Manager*, Feb. 5, 2013
U.S. Pat. 8,398,451 – *Tactile Input Interaction*, March. 19, 2013
JP 5241032 B2 – *Routing Across Multicore Network Using Real World or Modeled Data*, April 13, 2013
ZL201010124820.3 – *Interrupt Optimization for Multiprocessors*, April 17, 2013
U.S. Pat. 8,428,438 – *Apparatus for Viewing Television with Pause Capability*, April 23, 2013
JP 5266197 B2 – *Data Centers Task Mapping*, May 10, 2013
U.S. Pat. 8,508,498 – *Direction and Force Sensing Input Device*, August 13, 2013
U.S. Pat. 8,547,457 – *Camera Flash Mitigation*, October 1, 2013
U.S. Pat. 8,549,339 – *Processor core communication in multi-core processor*, October 1, 2013
101319048 (KR) – *Camera Flash Mitigation*, October 10, 2013
U.S. Pat. 8,628,478 – *Microphone for remote health sensing*, January 14, 2014
101362017 (KR) – *Thread Shift: Allocating Threads to Cores*, Feb. 5, 2014
101361928 (KR) – *Cache Prefill on Thread Migration*, Feb. 5, 2014
101361945 (KR) – *Mapping Of Computer Threads onto Heterogeneous Resources*, Feb. 5, 2014
JP 5487307 B2 – *Mapping Of Computer Threads onto Heterogeneous Resources*, Feb. 28, 2014
JP 5484580 B2 – *Task Scheduling Based on Financial Impact*, Feb. 28, 2014
JP 5487306 B2 – *Cache Prefill on Thread Migration*, Feb. 28, 2014
101372623 (KR) – *Power Management for Processor*, March. 4, 2014
101373925 (KR) – *Allocating Processor Cores with Cache Memory Associativity*, March 6, 2014
U.S. Pat. 8,676,668 – *Method for the determination of a time, location, and quantity of goods to be made available based on mapped population activity*, March 18, 2014
U.S. Pat. 8,687,533 – *Energy Reservation in Power Limited Networks*, April 1, 2014
101388735 (KR) – *Routing Across Multicore Networks Using Real World or Modeled Data*, April 17, 2014
U.S. Pat. 8,725,697 – *Cloud Data Backup Storage*, May 13, 2014
U.S. Pat. 8,726,043 – *Securing Backing Storage Data Passed Through a Network*, May 13, 2014
ZL201010124826.0 – *Dynamic scheduling interrupt controller for multiprocessors*, May 14, 2014
JP 5547820 B2 – *Processor core communication in multi-core processor*, May 23, 2014
U.S. Pat. 8,738,949 – *Power Management for Processor*, May 27, 2014

U.S. Pat. 8,751,854 – *Processor Core Clock Rate Selection*, June 10, 2014
JP 5559891 B2 – *Thermal Management in Multi-Core Processor*, June 13, 2014
101414033 (KR) – *Dynamic Computation Allocation*, June 25, 2014
JP 5571184 B2 – *Dynamic Computation Allocation*, July 4, 2014
101426341 (KR) – *Processor core communication in multi-core processor*, May 23, 2014
U.S. Pat. 8,799,671 – *Techniques for Detecting Encrypted Data*, Aug 5, 2014
101433485 (KR) – *Task Scheduling Based on Financial Impact*, Aug. 18, 2014
U.S. Pat. 8,824,666 – *Noise Cancellation for Phone Conversation*, Sept. 2, 2014
U.S. Pat. 8,836,516 – *Snoring Treatment*, Sept. 16, 2014
U.S. Pat. 8,838,370 – *Traffic flow model to provide traffic flow information*, Sept. 16, 2014
U.S. Pat. 8,838,797 – *Dynamic Computation Allocation*, Sept. 16, 2014
U.S. Pat. 8,854,379 – *Routing Across Multicore Networks Using Real World or Modeled Data*, Oct. 7, 2014
JP 5615361 B2 – *Thread Shift: Allocating Threads to Cores*, Oct. 15, 2014
U.S. Pat. 8,866,621 – *Sudden infant death prevention clothing*, Oct. 21, 2014
U.S. Pat. 8,881,157 – *Allocating threads to cores based on threads falling behind threads*, Nov. 4, 2014
ZL201080024755.5 – *Camera Flash Mitigation*, Nov 5, 2014
U.S. Pat. 8,882,677 – *Microphone for remote health sensing*, Nov. 11, 2014
U.S. Pat. 8,924,743 – *Securing Data Cache through Encryption*, December 30, 2014
U.S. Pat. 8,994,857 – *Camera Flash Mitigation*, March 31, 2015
JP 5699140 B2 – *Camera Flash Mitigation*, April 8, 2015
ZL201080035189.8 – *Thread Shift: Allocating Threads to Cores*, June 10, 2015
ZL201180005030.6 – *Processor core communication in multi-core processor*, June 10, 2015
U.S. Pat. 9,143,814 – *Method and system for adaptive transcoding and transrating in a video network*, Sept 22, 2015
ZL201080035177.5 – *Mapping Of Computer Threads onto Heterogeneous Resources*, Oct. 14, 2015
U.S. Pat. 9,178,694 – *Securing Backing Storage Data Passed Through a Network*, November 3, 2015
U.S. Pat. 9,189,282 – *Thread-to-core mapping based on thread deadline, thread demand, and hardware characteristics data collected by a performance counter*, November 17, 2015
U.S. Pat. 9,189,448 – *Routing image data across on-chip networks*, November 17, 2015
U.S. Pat. 9,208,093 – *Allocation of memory space to individual processor cores*, December 8, 2015
U.S. Pat. 9,239,994 – *Data Centers Task Mapping*, January 19, 2016
ZL201080036611.1 – *Allocating Processor Cores with Cache Memory Associativity*, January 20, 2016
EP2228779 B1 – *Traffic flow model to provide traffic flow information*, Jan. 27, 2016
U.S. Pat. 9,262,628 – *Operating System Sandbox*, February 16, 2016
GB2485682 – *Mapping Of Computer Threads onto Heterogeneous Resources*, Sept. 28, 2016
U.S. Pat. 9,330,137 – *Cloud Data Backup Storage Manager*, May. 3, 2016
ZL201080035185.X – *Cache Prefill on Thread Migration*, Aug. 24, 2016
U.S. Pat. 9,519,305 – *Processor Core Clock Rate Selection*, December 13, 2016
U.S. Pat. 9,569,270 – *Mapping thread phases onto heterogeneous cores based on execution characteristics and cache line eviction count*, February 14, 2017
GB2485683 – *Thread Shift: Allocating Threads to Cores*, Oct. 18, 2017
U.S. Pat. 9,852,435 – *Telemetrics based location and tracking*, December 26, 2017.
U.S. Pat. 9,915,994 – *Power management for processor*, March 13, 2018
U.S. Pat. 9,927,254 – *Traffic flow model to provide traffic flow information*, March 27, 2018
EP2254048 B1 – *Thread Mapping in Multi-Core Processors*, August 29, 2018
U.S. Pat. 10,860,432 – *Cloud Data Backup Storage Manager*, December 8, 2020

Expert testimony by deposition or at trial – April 15, 2018 - -present

Case	Venue	Case Number
Joe Andrew Salazar v HTC Corporation	E.D. Texas	2:16-cv-010986-JRG-RSP
Hitachi Maxell, Ltd. v. ZTE Corporation and ZTE (USA), Inc.	E.D. Texas	5:16-cv-00179 5:16-cv-00178
INTER PARTES REVIEW OF U.S. PATENT NO. 7,663,506 (Mediatek v AMD)	PTAB	IPR2017-00101 IPR2017-00102
Papst Licensing GmbH & Co. KG v. Samsung Electronics Co.,Ltd. and Samsung Electronics America, Inc.	E.D. Texas	6:15-CV-1102
HTC Corporation v. Telefonaktiebolaget LM Ericsson	E.D. Texas	6: 18-cv-00243-JRG
Seven Networks, LLC v ZTE (USA) Inc and ZTE Corporation	N. D. Texas - Dallas	3:17-CV-1495
AGIS Software Development, LLC v. HTC Corporation	E. D. Texas	2:17-cv-514
Barbaro Technologies, LLC v. Niantic, Inc	N.D. CA	3:18-cv-02955-RS
Immersion Corp. v. Samsung Electronics America, Inc. et al	E.D. Texas	2:17-cv-00572
INTER PARTES REVIEW OF U.S. PATENT NO. 7,171,526 (Northstar Innovations – Micron)	PTAB	IPR2018-01004 IPR2018-01005
CISCO SYSTEMS, INC., vs. UNILOC USA, INC., UNILOC 2017 LLC and UNILOC LICENSING USA LLC	N.D. CA	3:18-cv-04991-SI
INTER PARTES REVIEW OF U.S. PATENT NO. 8,020,014 (Intel/VLSI)	PTAB	IPR2018-01661 IPR2018-01312
INTER PARTES REVIEW OF U.S. PATENT NO Patent 9,294,799 (Comcast/Rovi)	PTAB	IPR2019-00299
Inter Partes Review of U.S. Patent No 7720929 (Unified Patents v Datascape)	PTAB	IPR2019-01115
Solas OLED Ltd,, v. Samsung Display Co,, Ltd,, Samsung Electronics Co, Ltd,, and Samsung Electronics America, Inc,,	PTAB	IPR2019-01668
INTER PARTES REVIEW OF U.S. PATENT NO Patent 8,973,069 (Comcast/Rovi)	PTAB	IPR2019-01434
U.S. Patent No. 8,448,215 IPR (Comcast v Rovi)	PTAB	IPR2019-01353
U.S. PATENT NO. 8,847,898 IPR filing (Samsung v Neodron)	PTAB	IPR2020-00234
U.S. PATENT NO. 8,610,009 IPR filing (Samsung v Neodron)	PTAB	IPR2020-00225
U.S. PATENT NO. 10,365,747 IPR filing (Samsung v Neodron)	PTAB	IPR2020-00308

AGIS Software Development LLC v. Google LLC, AGIS Software Development LLC v. WAZE Mobile Limited,and AGIS Software Development LLC v. Samsung Elecs. Co., Ltd. et al	E.D. Texas	2:19-cv-00361-JRG 2:19-cv-00359-JRG 2:19-cv-00362-JRG
Inter Partes Review of U.S. Patent No 8,112,670 (Sony)	PTAB	IPR2020-00726
U.S. Patent 8,819,505 IPR (Intel v PACT)	PTAB	IPR2020-00525
Inter Partes Review of U.S. Patent No 8,078,540 (Sony)	PTAB	IPR2020-00922
Inter Partes Review of U.S. Patent No 9,037,807 (Intel v PACT)	PTAB	IPR2020-00540
HONG KONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED AND UCLOUDLINK (AMERICA), LTD., vs. SIMO HOLDINGS INC. AND SKYROAM, INC.,	N.D. CA	3:18-cv-05031-EMC
Joe Andrew Salazar v AT&T Mobility, LLC et al.	E.D. Texas	2:20-cv-00004-JRG
Innovative Memory Solutions Inc. v Micron, Inc	Delaware	14-1480 RGA
Inter Partes Review of U.S. Patent No. 6,411,941	PTAB	IPR2021-01338 IPR2021-01406
Maxell, Ltd. et al v. VIZIO, Inc	C.D. CA	2-21-cv-06758
Inter Partes Review of U.S. Patent No. 7,619,912	PTAB	IPR2022-00615
Inter Partes Review of U.S. Patent Nos. 11,016,918 and 11,232,054	PTAB	IPR2022-00996 IPR2022-00999
In the Matter of Certain Smart Televisions, - Maxell, Ltd. et al v. VIZIO, Inc	ITC	337-TA-1338
INTER PARTES REVIEW OF U.S. PATENT NOS. 8,787,060 and 9,318,160	PTAB	IPR2022-01427 IPR2022-01428
Sweat Equity Partners, LLC vs. Swoop Search, LLC, et al.,	San Francisco Superior Court	CGC-21-591702
Walter Kidde Portable Equipment, Inc. v. First Alert, Inc. and BRK Brands	W.D. Texas	6:22-cv-566-ADA
INTER PARTES REVIEW OF U.S. PATENT NO. 11,093,417	PTAB	IPR2023-00454
INTER PARTES REVIEW OF U.S. PATENT NO. 9,858,215	PTAB	IPR2023-00455
INTER PARTES REVIEW OF U.S. PATENTS NOS. 9,369,081 and 9,941,830	PTAB	IPR2023-00992 IPR2023-00993
FlatFrog Laboratories AB v. Chemtronics Co., Ltd.	E.D. Texas	2:23-cv-00306
INTER PARTES REVIEW OF U.S. PATENT NOS. 8,624,844	PTAB	IPR2024-00404