

# Ike Nassi

Curriculum Vitae

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<a href="https://www.soe.ucsc.edu/people/inassi">https://www.soe.ucsc.edu/people/inassi</a> <a href="http://www.nassi.com/">http://www.nassi.com/</a> <a href="http://www.tidalscale.com">http://www.tidalscale.com</a>	Email: <a href="mailto:inassi@ucsc.edu">inassi@ucsc.edu</a> Email: <a href="mailto:ike@nassi.com">ike@nassi.com</a> Email: <a href="mailto:ike.nassi@tidalscale.com">ike.nassi@tidalscale.com</a>

## Industry Positions

2012-present	<b>TidalScale, Inc.</b> , Founder, Chairman, and CTO
2012-2016	CEO, Director
2016-2017	Founder, CTO, Chairman
2012-present	<b>UC Santa Cruz</b> , Adjunct Professor
2005-2011	<b>SAP AG (Executive VP and Chief Scientist)</b>
2005-2007	Senior Vice President, Head of Research, North America
2005-2007	co-Head, SAP Global Research
2006-2009	Head of Research, North America and China
2007-2011	Executive Vice President and Chief Scientist
2008-2010	Head of Global Business Incubator
2006-2011	Head of Sponsored Academic Research
2010-2011	Head of Technology Infrastructure Practice, SAP Research
2001-2005	<b>Firetide, Inc.</b> , Founder
2001-2002	CEO, CTO, Head of Product Operations, Chairman of the Board
2003-2004	CTO, Executive Vice President Product Operations, Chairman
2004-2005	CTO, Member of the Board
2000-2001	<b>Cisco Systems</b> (through acquisition of InfoGear) Director of Engineering, Managed Appliances and Services Business Unit

- 1997-2000      **InfoGear Technology** – CTO & Executive Vice President,  
Product Operations
- 1989-2007      **Apple Computer, Inc.**  
1989-2003      Advanced Technology Group, Director of Engineering  
                         Founder, Advanced Technology Lab, Cambridge, MA  
2003-2004      Vice President, Development Products, Cupertino, CA  
2004-2005      Vice President, System Software  
2005-2007      Senior Vice President, AppleSoft, Corporate Officer
- 1984-1989      **Encore Computer, Inc.**  
1984-1986      Vice President, Languages and Tools  
1986-1989      Vice President, Research  
1985-1989      DARPA Principal Investigator
- 1983-1984      **Visual Technology, Inc.**, Vice President, Software
- 1982-1983      **Ontel Corporation**, Vice President, Engineering
- 1976-1982      **Digital Equipment Corporation**  
1976-1977      Sr. Software Engineer and Manager, Languages and Tools  
1977-1982      Consulting Engineer & Manger Corporate Research
- 1974-1976      **SofTech, Inc.**, Principal Software Engineer
- Academics**
- 2015-present      **UC Santa Cruz**, Center for Research in Open Systems Software  
2012-present      **UC Santa Cruz**, Adjunct Professor, Computer Science  
2011-2012      **UC Santa Cruz**, Research Assistant, Computer Science  
2010-present      **MIT Computer Science and Artificial Intelligence Lab**,  
                         Research Affiliate,  
2008-1011      **MIT Sloan School, Center for Digital Business**, Advisory Board  
2009-2010      **MIT Computer Science and Artificial Intelligence Lab**,  
                         Visiting Scientist  
1997-1997      **University of California, Berkeley**, Visiting Scholar, EE&CS,  
1994-1996      **Stanford University**, Visiting Scholar, Computer Science,  
1990-1993      **MIT Laboratory for Computer Science**, Research Affiliate,  
1974-1979      **Boston University**, Met. College, Computer Science, Instructor,  
1972-1973      **SUNY Farmingdale**, Instructor, Data Processing,

### **Boards of Directors, Advisory Boards & Committees**

- 2012-2015      **SkyEra**, Advisory Board  
2012-2014      **Center for Technology Advancement**, Advisory Board  
2012-present      **Watermark**, Advisory Board

2008-present	<b>IEEE Computer Society</b> , Industry Advisory Board
2008-2011	<b>Northwestern University</b> , EE&CS Advisory Board
2009-2011	<b>Stony Brook University</b> , Advisory Board Center for Wireless and Information Technology
2008-2011	<b>Peking University</b> , Advisory Board, School of Engineering
1995-present	<b>Computer History Museum</b> , Founding Trustee
2009-2015	<b>Firetide, Inc.</b> , Senior Advisor
2001-present	<b>Viewpoints Research Institute (Alan Kay)</b> Advisor
2009-2011	<b>Anita Borg Institute for Women and Technology</b> , Trustee
2006-2007	<b>University of Arizona</b> , Eller School of Management, Advisory Board
1989-1995	<b>DARPA</b> Information Systems and Technology Board
1995-1996	<b>Taligent, Inc.</b> , Board of Directors, - Joint Venture, IBM and Apple
1990's	<b>Federal Networking Council Advisory Committee</b>
1990's	<b>Component Integration Laboratories</b> , Board of Trustees,
1980's-1990's	<b>Computer Museum</b> , Board of Overseers
1990's	<b>U.S. Council on Competitiveness</b> , Technical Advisory Committee,

### Independent Consulting

2001-2002	<b>Required Technology, Inc.</b> (columnar databases)
2001-2002	<b>Replicus Software, Inc.</b> (distributed mesh file systems)
2001-2003	<b>Allegis Capital, Inc.</b> (venture capital)
2001-2003	<b>Vanguard Ventures</b> (venture capital)
2002-2003	<b>PalmSource, Inc.</b> (operating systems for handheld devices)

### Patents

US 9,609,048	Resource Request And Transfer In A Multi-Node Distributed System
US 9,191,435	Selective Data Migration Or Remapping Of Virtual Processors To Provide Required Data Accessibility To Processor Cores
US 7,305,459	Wireless Service Point Networks
US 7,522,731	Wireless Service Points Having Unique Identifiers for Secure Communications
US 8,108,234 (new)	System and Method for Deriving Business Processes
US 8,843,415 (new)	Secure Software Service Systems and Methods
US 9,191,435 (new)	Selective Data Migration or Remapping of Virtual Processors to Provide Required Data Accessibility to Processor cores

See Appendix for additional patent activity

### Awards & Honors

2016	<b>Senior Member, IEEE</b>
2005	<b>Distinguished Alumni</b> , Computer Science Department,

- 1991                      Stony Brook University  
**Testimony before US House of Representatives**  
                                 re: Emerging Technologies Act of 1991
- 1983                      **Certificate for Distinguished Service**, US Department of Defense

**Student Ph.D. Committees:**

- David L. Black            **CMU** - Student of Rick Rashid.  
                                 *“Scheduling Support for Concurrency and Parallelism in the  
                                 Mach Operating System”*
- Michael Sevilla           **UCSC** - Student of Carlos Maltzhan and Scott Brandt.  
                                 *“Scalable Global Name Spaces with Programmable Storage”*

**Memberships:**        **Senior Member ACM, Senior Member IEEE**

**Research Funding:**

- 2011-present            **SAP** – Performance Analysis for Big Data, **\$200,000**  
1986-1989                **DARPA** – Hierarchically Structured Multiprocessors, **\$23,500,000**

**List of Products Released (in chronological order):**

1. BCPL compiler for PDP-15
2. Jovial/J3B compiler for IBM 4Pi/AP 101 (special project)
3. Jovial/J3B avionics compiler for Litton 4516D (used in the B-1 bomber)
4. Jovial/J3b avionics compiler for Delco Magic 362F (used in the F-16 fighter)
5. Vax-11 Software Engineering Manual w/ Transportability Guidelines
6. Vax-11 Bliss Compiler
7. Bliss Portable Compiler
8. Bliss for PDP-10/20
9. Bliss for PDP-11
10. Vax-11 Debug
11. Vax-11 Runoff
12. Bliss Pretty-Print
13. Vax-11 Autodial
14. Vax-11 Ada Compiler
15. Vax-11 Ada multithreading run-time system
16. Vax-11 String instruction definitions
17. Vax-11 Run Time Library

18. Ontel Terminal Emulator
19. Ontel Amigo Personal Computer
20. Visual Technology Personal Computer
21. Visual Technology Portable Computer
22. Visual Technology Multi-user Xenix System
23. Encore Resolution Graphics Terminal
24. Encore Fortran compiler
25. Encore Pascal compiler
26. Encore C compiler
27. Encore Multimax multiprocessor
28. Encore Parallel Ada
29. Encore Parallel Debugger
30. Encore Parallel Ada Run-time
31. Encore Ultramax hierarchical multiprocessor
32. Rely-Drive high capacity disk subsystem for Mac Plus
33. Macintosh Common Lisp
34. Macintosh Dylan
35. Macintosh MPW (developer tools suite)
36. Macintosh Apple Interconnection Kit
37. Mac-Mach (Mach on PowerPC Macintosh)
38. Mac OS Releases (various releases on Motorola 68K and PowerPC ... 7.5/7.6/7.8, etc.)
39. InfoGear iPhone
40. InfoGear iPhone-2
41. InfoGear/Cisco Voyager (unreleased wireless webpad)
42. Firetide indoor wireless mesh router (various versions)
43. Firetide outdoor wireless mesh router (various versions)
44. SAP Enterprise Supercomputer (type 1)
45. SAP Enterprise Supercomputer (type 2)

Invited Public Presentations and Panel Discussions:

46. Containers and Software-Defined Servers, 2018-02, O'Reilly Software Architecture Conference, NYC
47. Blog: Containers and Software-Defined Servers: A Win-Win (2018-02)

48. Blog: Predicting Yesterday's Weather (2017-05)
49. How to Build a Software-Defined Server, and How Best to Use It, Supercomputing Frontiers 2017, Singapore
50. TidalScale: Software - Defined Servers, STAC Summit, November 2016
51. Comparing a Virtual Supercomputer with a Cluster for Spark in-memory Computations, Spark/ML Conference, NYC, April 2016
52. Mantle: A Programmable Metadata Load Balancer for the Ceph File System, Sevilla, M, Watkins, N, Maltzahn, C, Nassi, I, Brandt, SA, Weil, SA, Farnum, G, Fineberg, S, SC '15: Proceedings of the 2015 ACM/IEEE conference on Supercomputing, 11/2015
53. Advances in Virtualization In Support of In-Memory Big Data Applications, I. Nassi, High Performance Transaction Systems 2015, September 2015
54. SupMR: Circumventing Disk and Memory Bandwidth Bottlenecks for Scale-up MapReduce, Sevilla, M, Nassi, I, Ioannidou, K, Brandt, SA, Maltzahn, C, May 2014, LSPP'14
55. Software Scaled Computing: Resizing the Computer to Fit the Application, TTI/Vanguard Conference on "Reprogramming Programming", Washington DC, September 2014
56. A Framework for an In-depth Comparison of Scale-up and Scale-out, Sevilla, M, Nassi, I, Ioannidou, K, Brandt, SA, Maltzahn, C, DISCS '13 (in conjunction with SC 2013), 11/2013
57. Graduate Leadership forum, UCSC, "Entrepreneurship and Social Impact", June 2012
58. UCSC presentations on "Enterprise Supercomputers", System Research Lab, Database Group, System Storage Research Center (2012, various dates)
59. High Performance Transactions Systems Conference, "Enterprise Supercomputers", October 24, 2011
60. MITRE Corporation, "Enterprise Supercomputers", McLean VA & Bedford MA (telecast), October 13, 2011
61. TTI/Vanguard, "Real" Real Time Conference, "Enterprise Supercomputers", Paris, July 12, 2011
62. SAP Closing keynote, SAP Research Day, July 5, 2011, "Catching the Wave: Tackling the Inflection Point in Enterprise Computing"
63. Microsoft Research "Enterprise Supercomputers", June 17, 2011
64. MIT/CSAIL on "Enterprise Supercomputers", June 1, 2011
65. MIT/Sloan on "Enterprise Supercomputers", June 1, 2011
66. Invited Keynote Presentation -Third Symposium of the HyperTransport™ Center of Excellence "Coherent Shared Memory Revisited" Mannheim, University of Heidelberg, February 8-9th, 2011

67. "Transactional Intent" with Shel Finkelstein, Thomas Heinzl, Rainer Brendle, Ike Nassi and Heinz Roggenkemper. 5th Biennial Conference on Innovative Data Systems Research (CIDR '11) January 9-12, 2011, Asilomar, California, USA.
68. Invited presentation - "It's Groundhog Day all over again!" JHTC, July 13, 2010
69. Invited Keynote Presentation - "Web Services: Meeting the Software Challenge of Future HW and Global Business Trends" (July 11 2007) 2007 IEEE Congress on Services (Joint Conference: IEEE International conference on Web Services (ICWS 2007) and IEEE International Conference on Services Computing (SCC 2007))
70. Panel Discussion - "Innovating with Partners in China: Negotiation, Collaboration, and IP Strategies for New Product Development" (March 28-29, 2007) The Management Roundtable (<http://www.ManagementRoundtable.com>)
71. "Induction of Alan Kay" into the Computer Resellers News Hall of Fame (November 2006)
72. "Issues in Wireless Mesh Networking", Distinguished Alumni Lecture, 35th Anniversary of the Founding of Stony Brook University's Computer Science Department (May 2005)
73. "The Advantage of Invisibility and Cooperation in Wireless Mesh Networks", IEEE 802.11 TGs, Atlanta (March 2005)
74. "Wireless Mesh Networks", Red Herring 100 conference, Monterey (December 2004)
75. Panel: Wireless Mesh Networks, WiFi Planet conference, San Jose (November 2004)
76. Panel: Wireless Mesh Networks, Next Generation Networks (November 2004)
77. Webinar (Unstrung): Introduction to Wireless Mesh Networks (July 2004)
78. Webinar: (Unstrung): Wireless Mesh Networks (June 2004)
79. Panel: "Putting Hotspots to Work", CeBIT America (May 2004)
80. Panel on Mesh Networking, Eye for Wireless Conference, San Francisco (April 2004)
81. "Emergence of Wireless Mesh Networking", O'Reilly Emerging Technology Conference, San Diego (February 2004)
82. Panel on Wireless Mesh Networking, WiFi Planet, December 2003
83. "The Emergence of Wireless Local Area Mesh Networks", TTI Vanguard Conference on Resiliency, Brussels (July, 2002)
84. Embedded Processor Forum, panel on Internet Appliances (June, 2000)
85. Spring Internet World (1998)
86. Fortune Magazine Information Technology Conference, panel on Internet Appliances (1998)
87. PC-Expo (1998)
88. Apple Technology Forum, Beijing (1994)
89. Keynote - Apple Worldwide Developers Conference (1994, 1995, 1996)

90. IBM T.J. Watson Research Center (March 1993)
91. Rochester Apple Developer's Association (January 1993)
92. Bay Area MADA (May, 1992)
93. Invited Presentation on Advanced Technology at Apple (1992), Harvard Business School
94. U.S. House of Representatives, Committee on Energy and Commerce, Subcommittee on Telecommunications and Finance. Testimony on HR 531, "Emerging Telecommunications Act of 1991" (March 12, 1991)
95. Boston Computer Society Mac MegaMeeting (1990)
96. C-3 Technology Assessment Conference, Defense Communications Agency and the National Security Industrial Association (1989)
97. SDIO Parallel Processing Users Group (1987, 1988)
98. San Diego SIGAda (1988)
99. Bay Area SIGAda (1988)
100. Colloquium, Iowa State University (1989)
101. Boston SICPLAN (1987)
102. National Computer Conference (1987)

#### Technical Publications

103. Revisiting Scalable Coherent Shared Memory, Bell and Nassi, IEEE Computer, Special Issue: Outlook 2018, January 2018
104. Programming an Application When Memory Size Is No Longer A Constraint, IEEE Computer, August 2017
105. Blog Post: Application Programming When Memory Is No Longer A Constraint
106. Blog Post: SAP Chief Scientist: "In-Memory Computing is Like Groundhog Day All Over Again, <http://news.sap.com/2011/01/18/in-memory-computing-it's-groundhog-day-all-over-again>
107. "Transactional Intent", Shel Finkelstein, Thomas Heinzl, Rainer Brendle, Ike Nassi, and Heinz Roggenkemper, 5th Biennial Conference on Innovative Data Systems Research (CIDR '11), January 2011
108. Y. Karabulut and I. Nassi: "Secure Enterprise Service Consumption for SaaS Technology Platforms", 1st IEEE Workshop on Information and Software as Services, Shanghai, China, March 2009
109. "The Challenges of Application Service Hosting", Ike Nassi, Joydip Das, and Ming-Chien Shan, Lecture Notes in Computer Science, Springer Verlag 4607/2007, Web Engineering, Pages 545-549.



110. "Secure Scripting Based Composite Application Development: Framework, Architecture, and Implementation" by Dinkelaker, Johnstone, Karabulut, and Nassi. In Proceedings of the 3rd International Conference on Collaborative Computing: Networking, Applications, and Worksharing, sponsored by the IEEE Computer Society, et al. New York, Nov. 12-15, 2007.
111. "Government Agency Interoperation in Security Applications" by N. Adams et al, Chapter 14, Handbooks in Information Systems Volume 2, National Security. Elsevier 2007. Edited by H. Chen et al.
112. "The Challenges of Application Service Hosting", with Ming-Chien Shan. International Conference on Web Engineering 2007, July 2007, Como Italy.
113. "Semantics-based Threat Structure Mining", Adam et al, Proceedings of the 2006 international conference on Digital Government Research
114. Preface to the book "Dylan, An Object Oriented Dynamic Language". Apple Computer Inc. (1992).
115. Symmetric Parallel Processing, w/ Ilya Gertner, in the book "Aerospace Software Engineering", Chris Anderson, ed. Volume 136 Progress in Astronautics and Aeronautics (1991)
116. "A Preliminary Report on the UltraMax", DARPA Conference on Mathematical and Scientific Computing, 1987, (Syracuse University)
117. "An Analysis of Continuous Time Simulation on a Shared Memory Multiprocessor", with S. Mainwaring, Encore Technical Report 87-001
118. "The Encore Multimax: A Multiprocessor Computing Environment", with Moore, O'Neil, Siewiorek, in 32-Bit Microprocessors, Nikkei Datapro Books II (1986)
119. "The Encore Continuum: A Complete Distributed Workstation-Multiprocessor Computing Environment", with G. Bell, H. Burkhardt, S. Emmerich, A. Anzelmo, R. Moore, D. Schanin, and C. Rupp, Proceedings of the National Computer Conference, pp. 147-155, 1985
120. Liberty Net, An Architectural Overview, IEEE Compcn, 1982
121. "What is Ada?", with R. Brender, June 1981 IEEE Computer
122. "A Critical Look at the Process of Tool Development: An Industrial Perspective", in Software Development Tools, Riddle and Fairley (eds.), Springer Verlag, 1980
123. "Efficient Implementation of Ada Tasks", with A. N. Habermann, DEC Technical Report, 1980 (Tech. Rept. CMU-CS-81-147, Carnegie Mellon University, Pittsburgh, PA, June, 1981)
124. "VAX-11 Software Engineering Manual", January 1977
125. "Operational Equivalence and a Hierarchy of Control Languages", Eighth Annual Princeton Systems Conference on Information Sciences and Systems, 1974
126. Nassi, I.R. and Akkoyunlu, E.A. "Verification Techniques for a hierarchy of Control Structures", Technical Report #26, Dept. of Computer Science, SUNY Stony Brook, January 1974, 48 pp

127. Control Structure Semantics for Programming Languages, Ph.D. thesis, 1974
128. "Structured Flowcharts", with B. Shneiderman, SIGPLAN Notices, 1973

## Additional Patent Information

## Legend:

PCT = Patent Cooperation Treaty

+ = Provisional (1 year to convert)

EP = European Filing

Converted = converted from provisional into a non-provisional application

Green = Granted

Firm Reference	Client Reference	Country	Patent Type	Status	Application Number	Filed Date	Patent Number	Granted Date	Title	Additional Notes
<b>Granted Patents</b>										
TIDAP001		United States of America	Non Provisional	Granted	13/830,094	03/14/2013	9,191,435	11/17/2015	SELECTIVE DATA MIGRATION OR REMAPPING OF VIRTUAL PROCESSORS TO PROVIDE REQUIRED DATA ACCESSIBILITY TO PROCESSOR CORES	
TIDAP001C1		United States of America	Non Provisional	Granted	14/880,132	10/09/2015	9,609,048	03/28/2017	RESOURCE REQUEST AND TRANSFER IN A MULTI-NODE DISTRIBUTED SYSTEM	Continuation of TIDAP001
<b>US Non Provisional Patent Applications</b>										
TIDAP001C2		United States of America	Non Provisional	Published	15/429,638	02/10/2017			SELECTIVE RESOURCE MIGRATION	Continuation of TIDAP001C1
TIDAP002		United States of America	Non Provisional	Published	13/830,160	03/14/2013			HIERARCHICAL DYNAMIC SCHEDULING	
TIDAP005		United States of America	Non Provisional	Published	15/279,187	09/28/2016			NETWORK ATTACHED MEMORY USING SELECTIVE RESOURCE MIGRATION	
TIDAP006		United States of America	Non Provisional	Application	15/687,173	08/25/2017			ASSOCIATING WORKING SETS AND THREADS	
TIDAP007		United States of America	Non Provisional	Application	15/687,172	08/25/2017			DYNAMIC SCHEDULING	
TIDAP010		United States of America	Non Provisional	Application	15/687,154	08/25/2017			RESOURCE MIGRATION NEGOTIATION	
<b>US Provisional Patent Applications</b>										
TIDAP001+		United States of America	Provisional	Converted	61/692,648	08/23/2012			HIERARCHICAL DYNAMIC SCHEDULING	
TIDAP005+		United States of America	Provisional	Converted	62/236,076	10/01/2015			NETWORK ATTACHED MEMORY USING SELECTIVE RESOURCE MIGRATION	
TIDAP006+		United States of America	Provisional	Converted	62/457,609	02/10/2017			ASSOCIATING WORKING SETS AND THREADS	
TIDAP007+		United States of America	Provisional	Converted	62/380,896	08/29/2016			DYNAMIC SCHEDULING	
TIDAP008+		United States of America	Provisional	Decision to not convert	62/449,535	01/23/2017			PROGRAMMING AN APPLICATION WHEN MEMORY SIZE IS NO LONGER A CONSTRAINT	
TIDAP009+		United States of America	Provisional	Converted	62/468,856	03/08/2017			DYNAMIC SCHEDULING	
TIDAP010+		United States of America	Provisional	Converted	62/525,544	06/27/2017			RESOURCE MIGRATION NEGOTIATION	
TIDAP011+		United States of America	Provisional	Application	62/525,552	06/27/2017			MEMORY THREAD LOCALITY	
TIDAP012+		United States of America	Provisional	Application	62/553,005	08/31/2017			ENTANGLEMENT OF PAGES AND GUEST THREADS	
TIDAP013+		United States of America	Provisional	Application	62/586,035	11/14/2017			VIRTUALIZED I/O	
TIDAP014+		United States of America	Provisional	Application	62/586,049	11/14/2017			DYNAMIC RECONFIGURATION OF RESILIENT LOGICAL MODULES IN A SOFTWARE DEFINED SERVER	
TIDAP015+		United States of America	Provisional	Application	62/586,052	11/14/2017			FAST BOOT	
<b>International Patent Applications</b>										
TIDAP003PCT		Patent Cooperation Treaty	Non Provisional	Expired	PCT/US13/58262	09/05/2013			SELECTIVE RESOURCE MIGRATION	
TIDAP003EP		European Patent	Non Provisional	Published	13893153	02/15/2016			SELECTIVE RESOURCE MIGRATION	
TIDAP004PCT		Patent Cooperation Treaty	Non Provisional	Expired	PCT/US13/58271	09/05/2013			HIERARCHICAL DYNAMIC SCHEDULING	
TIDAP004EP		European Patent	Non Provisional	Published	13893082.1	02/15/2016			HIERARCHICAL DYNAMIC SCHEDULING	
TIDAP005PCT		Patent Cooperation Treaty	Non Provisional	Published	PCT/US16/54414	09/29/2016			NETWORK ATTACHED MEMORY USING SELECTIVE RESOURCE MIGRATION	
TIDAP006PCT		Patent Cooperation Treaty	Non Provisional	Application	PCT/US17/48903	08/28/2017			ASSOCIATING WORKING SETS AND THREADS	