

Michael Zyda

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Research Interests: computer graphics, large-scale, networked 3D virtual environments, agent-based simulation, modeling human and organizational behavior, interactive computer-generated story, computer-generated characters, video production, entertainment/defense collaboration, serious and entertainment games, and modeling and simulation.

Pioneer in the following fields: computer graphics, networked virtual reality, modeling and simulation, serious and entertainment games.

Education

Washington University - St. Louis, Missouri 1978-1984
D.Sc. Computer Science - Awarded January, 1984
School of Engineering and Applied Science
“Algorithm Directed Architectures for Real-Time Surface Display Generation”

University of Massachusetts, Amherst - Amherst, MA
1976-1978
M.S. Computer and Information Science Awarded September 1978

University of California, San Diego, Revelle College - La Jolla, California 1972-1976
B.A. Applied Mechanics and Engineering Sciences/Bioengineering - Awarded 1976
Minor in Spanish Literature

Languages – Spanish (6 years), Japanese (2.5 years).

Academic Positions

University of Southern California – Los Angeles

Founder & Director of the USC GamePipe Laboratory &
Viterbi School’s Games degree programs. October 2004 – present
Founder USC’s Joint Games Program, now part of USC Games March 2006 – present
Professor of Engineering Practice, USC Department of Computer Science January 2005 – March 2006
Research Staff, USC, Information Sciences Institute February 2004 – December 2004
Visiting Research Scholar, USC, Information Sciences Institute

Naval Postgraduate School - Monterey, CA

Founder & Director, The MOVES Institute November 2000 – November 2004
Professor of Computer Science July 93 – January 2005
Founding Chair, Modeling, Virtual Environments and Simulation Academic Group April 96 – April 01
Academic Associate Chair for the Modeling, Virtual Environments March 97 - April 99
and Simulation Curriculum
Academic Associate Chair for the Department of Computer Science July 92 - March 97
Granted tenure in the Department of Computer Science July 90
Associate Chair for Research, Department of Computer Science April 90 - June 91

Associate Chair for Instruction, Department of Computer Science	July 88 - June 89
Associate Chair for Administrative Affairs, Department of Computer Science	May 87 - June 88
Associate Professor of Computer Science	July 87 - June 93
Assistant Professor of Computer Science	Feb. 84 - June 87

Washington University - St. Louis, MO

Research Associate, Department of Computer Science	August 83 - January 84
Research Associate, Department of Computer Science and Department of Biological Chemistry Washington University and Washington University School of Medicine, St. Louis.	March 83 - August 83
Research Associate, Department of Computer Science	September 81 - March 83
Research Assistant, Department of Computer Science	September 78 - August 81

University of Massachusetts, Amherst - Amherst, MA

Teaching Associate/Teaching Assistant Department of Computer and Information Science	September 76 - August 78
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University of California, San Diego - La Jolla, CA

Research Assistant, Department of Chemistry	June 73 - July 76
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Complete Publications List

Books

1. "[America's Army PC Game - Vision and Realization](#)," published by the MOVES Institute and the US Army, February 2004, 40 pages.
2. Singhal, Sandeep and Zyda, Michael [Networked Virtual Environments - Design and Implementation](#), ACM Press Books, SIGGRAPH Series, 23 July 1999, ISBN 0-201-32557-8, 315 pages.
3. Cockayne, William and Zyda, Michael J., [Mobile Agents](#), Manning Press/Prentice-Hall, August 1997, ISBN: 1-884777-36-8.

NRC Reports – Member or Chair of Committee

4. [Opportunities for the Employment of Simulation in US Air Force Training Environments](#), Air Force Studies Board, Division on Engineering & Physical Sciences, National Research Council, National Academies Press, Washington, DC, December 2014, 65 pages. Member of the NRC Committee.
5. [Future U.S. Workforce for Geospatial Intelligence](#), Board of Earth Sciences and Resources and Board on Higher Education and Workforce, Committee on the Future U.S. Workforce for Geospatial Intelligence, National Research Council, National Academies Press, Washington, DC January 2013, ISBN 0-309-xxx. Member of the NRC Committee.
6. [The Rise of Games and High-Performance Computing for Modeling and Simulation](#)," Division of Engineering & Physical Sciences Tiger Standing Committee, National Research Council, National Academies Press, Washington, DC, 2009, ISBN 0-309-14777-8-X, 129 pages. Member of the NRC committee.
7. [Behavioral Modeling and Simulation: from Individuals to Societies](#), Committee on Human Factors, Division of Behavioral and Social Sciences and Education, National Research Council, National Academies Press, Washington, DC, 2008, ISBN 0-309-11862-X. Member of the NRC committee.
8. [Defense Modeling, Simulation, and Analysis](#), Committee on Defense, Modeling, Simulation and Analysis, Mathematical Sciences and Their Application Board, National Research Council, National Academies Press, Washington, DC, 2006, ISBN 0309103037, 96 pages, member of the NRC committee.
9. [FORCenet Implementation Strategy](#), Committee on the FORCenet Implementation Strategy, Naval Studies Board, Division on Engineering and Physical Sciences, National Research Council, National Academies Press, Washington, DC, July 2005, ISBN 0309100259, 260 pages, member of the NRC committee.
10. [Embracing Change - the Way Ahead for NASA's Computing and Communications Technology](#), Editor: Michael Zyda as Chair of the Potomac Institute's NASA Computing and Communications Technology Advisory Group, 23 December 2004, 81 pages.
11. [An Assessment of NASA's Aeronautics Technology Programs](#), Committee for the Review of NASA'S Revolutionize Aviation Program, Aeronautics and Space Engineering Board, Division on Engineering and Physical Sciences, National Research Council, National Academy Press, Washington, DC, January 2004, ISBN-0-309-09119-5, 195 pages, member of the Panel on the Vehicle Systems Program.
12. [An Assessment of NASA's Pioneering Revolutionary Technology Program](#), Committee for the Review of NASA's Pioneering Revolutionary Technology (PRT) Program, Aeronautics and Space Engineering Board, Division on Engineering and Physical Sciences, National Research Council, National Academy Press, Washington, D.C., October 2003, ISBN 0-309-09080-6, 189 pages. Chair of the CICT Panel of this Committee.
13. [Advanced Engineering Environments Phase 2 – Design in the New Millennium](#), National Academy Press, September 2000, ISBN 0-309-07125-9, 67 pages. Member of NRC committee.
14. [Advanced Engineering Environments - Achieving the Vision, Phase 1](#), National Academy Press, June 1999, ISBN 0-309-06541-0, 48 pages. Member of NRC committee.
15. Zyda, Michael and Sheehan, Jerry (eds.), [Modeling and Simulation: Linking Entertainment & Defense](#), National Academy Press, September 1997, ISBN 0-309-05842-2, 181 pages. Chaired this NRC Committee.
16. Durlach, Nathaniel and Mavor, Anne (eds.), [Virtual Reality: Scientific and Technological Challenges](#), Committee on Virtual Reality Research and Development, National Academy Press, Washington, DC, 1995.

Sections written or with major contributions: Chapters - "Executive Summary", "Overview", "Computer Hardware and Software for the Generation of Virtual Environments", and "Networking and Communications", ISBN 0-309- 05135-5.

Book Chapters

17. Kay M. Stanney, Kelly S. Hale & Michael Zyda, "Virtual Environments in the 21stst Century," introduction to the Second Edition of the Virtual Environments Handbook, 2014, pp 1-18.
18. Michael Zyda, Alex Mayberry, Jesse McCree, and Margaret Davis "From Viz-Sim to VR to Games: How We Built a Hit Game-Based Simulation," in W.B. Rouse and K.R. Boff (Eds.) Organizational Simulation: From Modeling & Simulation to Games & Entertainment, New York: Wiley Press, 2005.pp., ISBN 0471681636.
19. Margaret Davis, Russell Shilling, Alex Mayberry, Jesse McCree, Phillip Bossant, Scott Dossett, Christian Buhl, Christopher Chang, Evan Champlin, Travis Wigglesworth and Michael Zyda "Researching America's Army," in Design Research: Methods and Perspectives, edited by Brenda Laurel, MIT Press, 1 October 2003, ISBN 0262122634, pp. 268-275.
20. Michael Zyda and Douglas Bennett, "The Last Teacher," in 2020 Visions, from the Summit & Press Conference on the Use of Advanced Technologies in Education and Training, US Department of Commerce, 17 and 27 September 2002.
21. Kay M. Stanney and Michael Zyda "Virtual Environments in the 21st Century," in Handbook of Virtual Environments - Design, Implementation, and Applications, Lawrence Erlbaum Associates, Publishers, Mahwah, NJ, 2002, pp. 1-14.
22. Zyda, Michael "Games on the 'Net!," Chapter 9 of Das Internet von morgen - Neue Technologien für neue Anwendungen, edited by Clemens Baack and Jorg Eberspacher, Huthig Verlag Press, Heidelberg, Germany, September 1999, pp. 117-127. (revised from the Proceedings of the Munchner Kreis Congress on the Internet of Tomorrow, held at the European Patent Office in Munich, 19 - 20 November 1998).
23. Zyda, Michael J., Monahan, James G. and Pratt, David R. "NPSNET: Physically-Based Modeling Enhancements to an Object File Format," chapter in Creating and Animating the Virtual World, Editors: Nadia Magnenat Thalmann and Daniel Thalmann, Publisher: Springer-Verlag Tokyo, 1992, pp. 35-52.

Refereed Publications: Accepted Papers/Published Papers

24. Marc Spraragen, Peter Landwehr, Balakrishnan Ranganathan, Michael Zyda, Kathleen Carley, Yu-Han Chang and Rajiv Maheswaran (2013) Cosmopolis: A Massively Multiplayer Online Game for Social and Behavioral Research. *Journal of Artificial Societies and Social Simulation* 16 (1) 9.
<http://jasss.soc.surrey.ac.uk/16/1/9.html>
25. Lin, J., Spraragen, M., & Zyda, M. (2012a). Computational models of emotion and cognition. *Advances in Cognitive Systems*, 2, 59-76. Retrieved from <http://cogsys.org/pdf/paper-3-2-39.pdf>
26. Michael Zyda, "Computer Science in the Conceptual Age," CACM, Vol. 52, No. 12, December 2009, pp. 66-72.
27. Michael Zyda, "Creating a Science of Games," CACM, Vol. 50, No. 7, July 2007, pp. 26 - 29.
28. Joerg Wellbrink, Michael Zyda and John Hiles "Modeling Vigilance Performance as a Complex Adaptive System," *Journal of Defense Modeling and Simulation*, Volume 1, No.1, 2004, January 2004, pp.29-42.
29. Michael Zyda, John Hiles, Alex Mayberry, Michael Capps, Brian Osborn, Russ Shilling, Martin Robaszewski and Margaret Davis "Entertainment R&D for Defense," *IEEE CG&A*, January/February 2003, pp.28-36.
30. Helmuth Trefftz, Ivan Marsic, and Michael Zyda "Handling Heterogeneity in Networked Virtual Environments," *Presence*, Vol. 12, No.1, January 2003, pp. 38-52. Revised from *IEEE CG&A* 2002.
31. Katherine L. Morse and Michael Zyda "Multicast Grouping for Data Distribution Management," *Journal of Simulation Modeling Practice and Theory*, Elsevier, Vol. 9, Issue 3-5, 15 April 2002, pp.121-141.
32. Russell L. Storms and Michael J. Zyda "Interactions in Perceived Quality of Auditory-Visual Displays," *Presence*, Vol. 9, No. 6, December 2000, pp.557-580.

33. Yun, X., Bachmann, E.R., McGhee, R.B., Whalen, R.H., Roberts, R.L., Knapp, R.G., Healey, A.J., and Zyda, M.J. "Testing and Evaluation of an Integrated GPS/INS System for Small AUV Navigation," IEEE Journal of Oceanic Engineering, Vol. 24, No. 3, July 1999, pp.396-404.
34. Storms, R.L., Roesli, J.T., Biggs, L.J., Falby, J.S., Barham, P.T. and Zyda, Michael J., "The NPSNET Sound Cube," Presence, Vol. 7, No. 5, October 1998, pp.503-507.
35. Macedonia, Michael and Zyda, Michael "A Taxonomy for Networked Virtual Environments," IEEE Multimedia, Volume 4, No. 1, January - March 1997, pp. 48-56.
36. Brutzman, Donald P., Macedonia, Michael R. and Zyda, Michael J. "Internetwork Infrastructure Requirements for Virtual Environments," in White Papers - The Unpredictable Certainty, National Academy Press, pp. 110-122, 1997. Also in the Proceedings of the Virtual Reality Modeling Language (VRML) Symposium, San Diego Supercomputer Center (SDSC), San Diego, CA, December 13-15, 1995.
37. Macedonia, Michael R., Zyda, Michael J., Pratt, David R., Brutzman, Donald P. and Barham, Paul T. "Exploiting Reality with Multicast Groups," IEEE Computer Graphics & Applications (revised from appearance in the VRAIS '95 Proceedings), September 1995, pp.38-45.
38. Macedonia, Michael R., Zyda, Michael J., Pratt, David R., Barham, Paul T. and Zeswitz, Steven "NPSNET: A Network Software Architecture for Large Scale Virtual Environments," Presence, Vol. 3, No. 4, Fall 1994, pp.265-287.
39. Zyda, Michael J., Pratt, David R., Falby, John S., Barham, Paul and Kelleher, Kristen M. "NPSNET and the Naval Postgraduate School Graphics and Video Laboratory," Presence, Vol. 2, No. 3., pp. 244-258.
40. Zyda, Michael J., Pratt, David R., Falby, John S., Lombardo, Chuck and Kelleher, Kristen M. "The Software Required for the Computer Generation of Virtual Environments," Presence, Vol. 2, No. 2, pp. 130-140.
41. Cooke, Joseph M., Zyda, Michael J., Pratt, David R. and McGhee, Robert B. "NPSNET: Flight Simulation Dynamic Modeling Using Quaternions," Presence, Vol 1., No. 4, pp. 404-420.
42. Zyda, Michael J., Wilson, Kalin P., Pratt, David R., Monahan, James G. and Falby, John S. "NPSOFF: An Object Description Language for Supporting Virtual World Construction," Computers & Graphics, Vol. 17, No. 4, pp 457-464.
43. Zyda, Michael J., Pratt, David R., Falby, John S. and Mackey, Randy L. "NPSNET: Hierarchical Data Structures for Real-Time Three-Dimensional Visual Simulation," Computers & Graphics, Vol. 17, No. 1, 1993, pp. 65-69.
44. Zyda, Michael J., Pratt, David R., Osborne, William D., and Monahan, James G. "NPSNET: Real-Time Collision Detection and Response," The Journal of Visualization and Computer Animation, special issue on Simulation and Motion Control, Vol. 4, No. 1, January - March 1993, pp.13-24.
45. DeHaemer, Michael J. and Zyda, Michael J. "Simplification of Objects Rendered by Polygonal Approximations," Computers & Graphics, Vol. 15, No. 2, 1991, Great Britain: Pergamon Press, pp. 175-184. Paper received "Best Paper 1991" award from an international selection committee appointed by the editor of Computers & Graphics, 29 Sep 92. Also, one of the best papers of the decade in the journal's 2002 collection.
46. Zyda, M.J., McGhee, R.B., Kwak, S., Nordman, D.B., Rogers, R.C., and Marco, D. "3D Visualization of Mission Planning and Control for the NPS Autonomous Underwater Vehicle," IEEE Journal of Oceanic Engineering, Vol. 15, No. 3, July 1990, pp.217-221.
47. Luqi, P. D. Barnes and M. Zyda "Graphical Tool for Computer-Aided Prototyping," Information and Software Technology, Vol. 32, No. 3, April 1990, Great Britain: Butterworth & Co. Ltd..
48. Zyda, Michael J., Fichten, Mark A., and Jennings, David H. "Meaningful Graphics Workstation Performance Measurements," Computers & Graphics, Vol. 14, No. 3, 1990, Great Britain: Pergamon Press, pp.519-526.
49. Zyda, Michael J., McGhee, Robert B., McConkle, Corinne M., Nelson, Andrew H. and Ross, Ron S. "A Real-Time, Three-Dimensional Moving Platform Visualization Tool," Computers & Graphics, Vol. 14, No. 2, 1990, Great Britain: Pergamon Press, pp.321-333.

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