

iNEER Award Nomination Dossier

Nominator Information:

Name: Atam Dhawan
Title: Professor and Chair, Department of Electrical and Computer Engineering
Affiliation: New Jersey Institute of Technology
Address: University Heights, Newark, NJ 07102-1982 USA
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Nominee Information:

Name: John D. Carpinelli
Title: Associate Professor of Electrical and Computer Engineering
Director, Center for Pre-College Programs
Affiliation: New Jersey Institute of Technology
Address: University Heights
Email address: carpinelli@njit.edu
Telephone: +1 (973) 596-3536
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Category of Award: Recognition or Achievement

Suggested Citation (15 words or less): For outstanding contributions to international engineering education through textbook publication and service to ICEE conferences.

Will Nominee Be Present at Awards Ceremony in Coimbra or Melbourne (specify)?:

If selected for an iNEER Award, the nominee will be present at the ICEE meeting in Coimbra, Portugal.

Summary of Accomplishments:

I am pleased to nominate John D. Carpinelli for an iNEER Award. John has made significant contributions to engineering education at NJIT, throughout the United States, and internationally. He has made many more contributions than I can detail here, but I would like to focus on a few with the greatest impact on international engineering education.

In October 2000, Addison Wesley Longman Publishing Company, a division of Pearson Education, published John's textbook, *Computer Systems Organization and Architecture*. The book has a student-friendly writing style, and students taking courses that use this book find it approachable and easy to understand. John has a special ability to take complex topics and present them in a way that helps students at all levels understand the material and maximize their learning. The book has been extremely successful in the marketplace. It has been adopted at over 200 universities in over 25 countries, in a majority of these universities as a required or lead text for the course. Over 37,000 copies of the book have been sold worldwide, making it a best-seller in my estimation. As noted in John's CV, the book has been published under imprints in several countries. Of particular note, it has been fully translated into Korean, Simplified Chinese (Mainland China) and Traditional Chinese (Taiwan). There are probably quite a few more universities using the book, as we could only locate four universities in Mainland China using the book, but 7,000 copies have been printed there, all entirely in Simplified Chinese.

In addition to the textbook, John and his students developed several Java-based programs that simulate various functions within computer systems and microprocessors. This software is based on John's approach of using simple examples to explain concepts and then building on this foundation to introduce more complex topics. The applets use animation to illustrate the flow of data within computer systems and components, and students that use the applets find that it illustrates concepts in a way that no textbook can. It reaches the more visually-oriented students in classes at NJIT and many other universities. This software, both the source code and executable files, are made freely available to the engineering education community, and the software is used at universities in several countries.

I also note that Dr. Carpinelli has been an active volunteer within the iNEER organization. He has served as Secretary of the iNEER Awards Committee, and is currently on leave while his nomination is under review. He also organized special sessions at the 2001, 2002, and 2004 ICEE meetings, the first two focusing on the work of the United States' NSF-sponsored Engineering Education Coalitions and the latter an intriguing session titled *Twenty-five Years of Engineering Education: 1992-2017*. He has published numerous articles in engineering education conferences and journals, including several papers published at ICEE meetings.

On the national level within the United States, John made an important contribution as NJIT's coordinator of activities for the Gateway Engineering Education Coalition and a member of the Coalition's national governing board. I observed his work on the Coalition's activities within NJIT firsthand, and know that he did an excellent job of getting faculty members from various departments to work together as a team. His ability to build consensus really maximized our results, and our impact on student learning.

Finally, I note briefly several of Prof. Carpinelli's educational accomplishments. I note that this list is not complete, but I include it to show the breadth of his work.

- Developed and facilitated a workshop for K-12 teachers at the *ASEE K-12 Workshop* (Chicago, IL, 2006)
- Contributed the instructional activity *Introducing Engineering to K-12 Students using a Paper Drop Competition* to the TeachEngineering.org online archive based on the aforementioned workshop
- As Director of the Center for Pre-College Programs at NJIT, obtained a grant from the ExxonMobil/Bernard Harris Foundation to offer a summer science camp to 50 students from low-income households at no cost to the students (2007)
- Principal Investigator for an NSF-sponsored summer research experience, *An REU Site for Computer Networking and Security* (2006-2009)
- Co-Principal Investigator for an NSF-sponsored K-12 teacher training grant, *Medibotics: The Merging of Medicine, Robotics, and IT* (2007-2010)
- Session organizer for an IEEE Frontiers in Education Conference (2003)
- NJIT Campus Representative for the American Society for Engineering Education

In summary, John D. Carpinelli is an asset to engineering education. He has contributed greatly to the field on the international level, and his efforts have made NJIT a better place for students. I truly am pleased to nominate John for the iNEER Award and strongly recommend him as a recipient for the award.

Sincerely,



Atam P. Dhawan, Ph.D.
Professor and Chair
Department of Electrical and Computer Engineering
New Jersey Institute of Technology
University Heights
Newark, NJ 07102-1982
USA

Texas A&M University

August 18, 2007

Dr. Win Aung, Secretary General
International Network for Engineering Education and Research (iNEER)

Dear Dr. Aung:

I would like to support the nomination of Dr. John D. Carpinelli, Associate Professor of Electrical and Computer Engineering and Director, Center for Pre-College Programs, at New Jersey Institute of Technology (NJIT) for an iNEER Award. I have known Dr. Carpinelli for about ten years and am familiar with his contributions to engineering education. Dr. Carpinelli was a major contributor to innovations in engineering education through several of the Gateway Coalition programs at NJIT. The Gateway Coalition was one of the Engineering Education Coalitions, which were supported by the National Science Foundation to catalyze systemic change in engineering education in the United States. He has been an active contributor to ICEE and other engineering education conferences, both through publication of numerous papers as well as service roles in ICEE. He organized special sessions at the 2001, 2002, and 2004 ICEE meetings, including two on the work of the Engineering Education Coalitions.

Dr. Carpinelli's textbook on computer architecture, *Computer Systems Organization and Architecture*, has been adopted at over 200 universities in over 25 countries. In addition to the textbook, he has worked with NJIT students to develop several Java-based programs to help undergraduate students visualize several difficult-to-understand functions within computer systems and microprocessors. Both accomplishments provide evidence of Dr. Carpinelli's commitment, talent, and energy for helping undergraduate students master elements of electrical and computer engineering.

He has worked extensively to connect a broader community to engineering education. For example, he has offered, with the support of the ExxonMobil/Bernard Harris Foundation, a science summer camp for students from low-income households. He has worked with K-12 teachers to help them see how they might use engineering to motivate their students to learn science and engineering, and he has coordinated a program of undergraduate research experiences to help students recognize and enhance their research potential.

Based on these and other contributions to engineering education, I recommend Dr. John D. Carpinelli as an outstanding candidate for an iNEER Award.

Sincerely,

Signed JEF

Jeffrey E. Froyd, Research Professor
Director of Academic and Organizational Development
Office of the Dean of Faculties and Associate Provost
Texas A&M University



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Otto H. York
Department of Chemical Engineering

July 5, 2007

Dear Members of the Awards Committee:

I am pleased to submit this letter in support of Prof. John Carpinelli's nomination for an iNEER Award. John is a truly exceptional educator, and his commitment to education goes far beyond that of his peers, and the engineering education community is better for his being an active part of it. He has made a significant impact on the engineering education community, both within and outside of the United States.

John has had two primary areas in which he has contributed to international engineering education. Addison Wesley published John's book, *Computer Systems Organization and Architecture*, in October 2000, and the book became an immediate hit. It has been used as a primary text at over 100 universities in the United States and has been used at over 150 universities outside of the United States in over 25 countries. The book has been translated into Simplified Chinese, Traditional Chinese, and Korean, and has sold over 37,000 copies worldwide. He has also developed simulation software to illustrate the concepts covered in the textbook; this software has met with success and widespread use in several countries.

John's other area of contribution to international engineering education has been through the iNEER organization itself. He developed and chaired special sessions at ICEE conferences in 2001, 2002, and 2004. He also served as the secretary and a member of the Awards Committee until he recused himself while this nomination is under consideration.

Since joining NJIT in 1986, John has demonstrated a strong commitment to undergraduate education. As an assistant professor, he co-developed NJIT's undergraduate program in computer engineering, developed several courses for the program, and wrote most of the laboratory manuals used in the curriculum. He has also served as an active participant in the *New Jersey Partners in Learning Program*, a peer pairing program designed to improve the quality of teaching at NJIT and other universities in New Jersey. He was the only assistant professor at NJIT to volunteer to participate in this program, a further demonstration of his commitment to being the best teacher he could be. Given these facts, it is no surprise that John has consistently received high teaching evaluations from his students. He has received several College and University-wide awards for excellence in teaching, among which are *Excellence in Teaching for Undergraduate Instruction – Upper Division*, *Excellence in Teaching for Non-traditional Teaching*, *Ronald E. McNair Award for Contributions to the Program*, *Excellence in Innovation in Education*, and for serving as a member of the governing board of the *Gateway Engineering Education Coalition*. In 2004, he achieved the highest recognition for teaching at NJIT by receiving the designation of *Master Teacher*, an honor given to only three of approximately 400 faculty members that year. He chaired the Master Teacher Committee last

year and is chairing the University Teaching Awards Committee during the current academic year.

John is extremely active in K-12 outreach activities through NJIT's Center for Pre-College Programs, where he was recently appointed *Director of the Center*. He recently co-coordinated the New Jersey Science Olympiad regional competition, held at NJIT on January 11, 2007. Last summer he gave a workshop for teachers at the *ASEE Workshop on K-12 Education* in Chicago. He currently runs a successful Research Experience for Undergraduates program that is funded by the National Science Foundation, and works with teachers in a Research Experience for Teachers program on curriculum development. Most recently, he and his colleagues received an NSF ITEST grant for implementing robotics-based educational activities for middle and high school students and for training teachers to use these activities in the classroom.

In summary, John Carpinelli is an outstanding nominee for an iNEER Award. His impact on engineering education is important to the engineering education community. Within NJIT, his efforts in curriculum development and undergraduate research have improved the quality of education we offer to our students. His work on funded programs has directly impacted thousands of students and will undoubtedly continue to impact engineering education. And of course, his textbook has helped and will continue to help many students who use it in their courses. His contributions to the iNEER organization are of particular note. I am both pleased and proud to support John Carpinelli's nomination for the iNEER Award.

Sincerely,



Angelo J. Perna
Professor of Chemical Engineering
Director, NJIT Ronald E. McNair Postbaccalaureate Achievement Program



June 9, 2007

Atam P. Dhawan, Ph.D.
Chair and Professor
Department of Electrical & Computer Engineering
New Jersey Institute of Technology
323 Martin Luther King Jr. Blvd.
Newark, NJ 07102

Dear Dr. Dhawan,

I am pleased to write in support of Dr. John Carpinelli for the iNEER Award. Dr. Carpinelli has been the principal author of a number of textbooks or chapters of textbooks in the areas of Computer Systems, Computer Architecture, Switching Network Design, and Computer Control. It is my understanding that his latest text is receiving high acceptance and adoption by a number of educational programs both here and abroad. In addition to these text materials Dr. Carpinelli has developed a number of courses and software materials and simulations in the areas coincident with those of his texts. His materials are being used for both the traditional campus based programs as well as for distance education. These materials have been made available to educators irrespective of national boundaries. He has been an innovator and leader in advancing the use of technology in engineering education and particularly in the areas of his electrical engineering expertise. Dr. Carpinelli has had impact beyond his institution not only through his texts but also through organizing conference sessions and service to a number of professional publications nationally and internationally. I strongly encourage the consideration of Dr. Carpinelli for the iNEER Award.

Sincerely,

A handwritten signature in blue ink that reads "Eli Fromm".

Eli Fromm, Ph.D.

John D. Carpinelli

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New Jersey Institute of Technology
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Email: carpinelli@njit.edu
www: <http://web.njit.edu/~carpinel>

Education: Rensselaer Polytechnic Institute, Troy, NY

Ph.D. Computer and Systems Engineering, August, 1987
M.E. Electrical Engineering, December, 1984

Stevens Institute of Technology, Hoboken, NJ

B.E. Electrical Engineering, May, 1983

Interests: Computer-aided instruction, computer simulation, parallel processing, computer architecture, interconnection networks

Experience: New Jersey Institute of Technology (1986 to present)

Director, NJIT Center for Pre-College Programs (2007 – present)
Associate Professor of Electrical and Computer Engineering (1993 – present)
Assistant Professor of Electrical and Computer Engineering (1987 – 1993)
Special Lecturer of Electrical Engineering (1986 – 1987)
Member, Gateway Engineering Education Coalition Governing Board (2000-2003)
NJIT Gateway Coordinator (2000 – 2003)
Director, Multimedia Production and Internet Delivery Studio (2000 – 2002)
Associate Director, New Jersey Center for Multimedia Research (2000 – 2002)
Associate Professor of Computer and Information Sciences (joint appointment) (1995 – present)
Director, Computer Engineering Program (1994 – 1996)
Acting Associate Chair, ECE Department (1993 – 1996, 1997)
Associate Director, Computer Engineering Program (1992 – 1994)

- *Research Experience for Undergraduates Site in Computer Networking and Security* program coordinator
- Coordinated NJIT activities in undergraduate education for the Gateway Engineering Education Coalition program
- Coordinated preparations for successful ABET accreditation visit (Computer Engineering – 1995)
- Developed the MS program in Computer Engineering
- Participated in New Jersey Master Faculty Program/Partners in Learning Program
- Coordinator: Computer Engineering Senior Projects
- Chair: NJIT Excellence in Teaching Awards Committee (2 terms)
- Chair, ECE Department Computer Facilities and Usage Committee
- Member: NJIT Task Force on Undergraduate Education
- Member: NJIT Undergraduate Curriculum Review Committee
- Member: NCE College Accreditation Committee
- Member: NCE Program Accreditation Committee
- Member: Committee on Computer Engineering Curriculum
- Member of approximately 25 additional committees at University, College, and Department level

Honors:

- NJIT ECE Department Chair's Recognition Award, 2005 and 2006
- NJIT Master Teacher, 2004
- NJIT Excellence in Teaching Award (Team, Interdepartmental, Multidisciplinary, or Non-Traditional Teaching), 2004
- NCE Innovation in Education Award, 2001
- NJIT Excellence in Teaching Award (Upper Division Undergraduate Education), 1999
- Finalist for HKN C. Holmes MacDonald Outstanding Young Teacher Award, 1988, 1991.

Teaching: Courses Developed

- FED 101, Fundamentals of Engineering Design (ECE module)
- ECE/CoE 353, Advanced Computer Architecture (Distance Learning)
- ECE/CoE 353H, Honors Advanced Computer Architecture (Distance Learning)
- EE 698, Selected Topics in Electrical Engineering
- EE 699, Selected Topics in Electrical Engineering
- CoE 485, Computer Engineering Design Laboratory
- CoE 496H, Honors Independent Study
- CoE 496, Independent Study
- CoE 495, Computer Engineering Project
- CoE 493, Computer Engineering Laboratory III
- CoE 451, Computer Architecture
- CoE 391, Computer Engineering Laboratory I
- CoE 351, Computer Organization
- EE 352, Microprocessors

Educational Software Developed

- The DMA Controller Simulator
- The Beneš Network Simulator
- The Wallace Tree Simulator
- The Very Simple CPU Simulator
- The Relatively Simple CPU Simulator
- The Relatively Simple Computer System Simulator
- The Programmable Logic Device Simulator
- *APAP*: The Arithmetic Pipeline Analysis Package
- *MCCS*: The Mesh Connected Computer Simulator
- *DFDG*: The Data Flow Dependency Generator
- *INAP*: The Interconnection Network Analysis Package
- *J/APAP*: The Java Arithmetic Pipeline Analysis Package

Educational Materials Developed

- *Laboratory Manual and Supplementary Notes, FED 101: Freshman Engineering Design, Electrical and Computer Engineering Module*, 2004. Revised 2005.
- *Laboratory Manual and Supplementary Notes, ECE 458: Computer Systems*, 2003.
- *Computer Systems Organization and Architecture*, Addison-Wesley, 2001. (See the list of publications later in this CV for a complete list of editions of this textbook.)
- Developed new distance learning materials for *CoE 353, Advanced Computer Architecture*, 2002
- Developed distance learning materials for *CoE 353H, Honors Advanced Computer Architecture*, 2001.

- Videotaped lectures and online notes for *CoE 353, Advanced Computer Architecture*, 1998-1999
- *Laboratory Manual and Supplementary Notes, CoE 485: Computer Engineering Design Laboratory*, New Jersey Institute of Technology, Newark, NJ, 1996. Revised 1996; 2001
- *Laboratory Manual and Supplementary Notes, CoE 493: Computer Engineering Laboratory III*, New Jersey Institute of Technology, Newark, NJ, 1990. Revised 1991; 1992; 1993; 1995
- *Laboratory Manual and Supplementary Notes, EE 497: Computer Systems Laboratory*, New Jersey Institute of Technology, Newark, NJ, 1990. Revised 1991; 1992; 1994; 2001
- *Laboratory Manual and Supplementary Notes, CoE 391: Computer Engineering Laboratory I*, New Jersey Institute of Technology, Newark, NJ, 1989. Revised 1991; 1992; 1992; 1993
- *Laboratory Manual and Supplementary Notes, EE 393: Electrical Engineering Laboratory III, Part A: Microprocessors*, New Jersey Institute of Technology, Newark, NJ, 1989.
- *MCCS User's Guide*, New Jersey Institute of Technology, Newark, NJ, 1989. Revised 1992.
- *DFDG User's Guide*, New Jersey Institute of Technology, Newark, NJ, 1990.
- *APAP User's Guide*, New Jersey Institute of Technology, Newark, NJ, 1989.

Thesis Advisement

- Hamed Nassar. *Fault Tolerant Interconnection Networks for Multiprocessor Systems*, New Jersey Institute of Technology, April, 1989. Dissertation advisor.
- Hyun Yeop Lee. *Routing on Fault-Tolerant Multistage Interconnection Networks for Multiprocessor Systems*, New Jersey Institute of Technology, October, 1994. Dissertation advisor.
- Thesis advisor for over 50 MSCoE and MSEE students
- Project advisor for over 15 MSCoE, MSEE and MSCS students

Publications: Books and Book Chapters

- J. Carpinelli. *Computer Systems Organization and Architecture*, Addison-Wesley, 2001, 584 pages. ISBN # 0-201-61253-4.
 - J. Carpinelli. *Computer Systems Organization and Architecture (LPE – edition for India, Bangladesh, Pakistan, Nepal, Sri Lanka, and Maldives)*, Pearson Education, Delhi, India, 2006. ISBN # 81-7758-767-6.
 - J. Carpinelli. *Computer Systems Organization and Architecture (Taiwan, Traditional Chinese-language edition)*, Pearson Education North Asia, Limited, 2003. ISBN # 9-867594-92-4.
 - J. Carpinelli. *Computer Systems Organization and Architecture (Philippines, English-language edition)*, Pearson Education, 2003. ISBN # 9-814119-29-6.
 - J. Carpinelli. *Computer Systems Organization and Architecture (Mainland China, Simplified Chinese-language edition)*, People's Post and Telecommunications and Pearson Education North Asia, Limited, 2003. ISBN # 7-115-11243-6.
 - J. Carpinelli. *Computer Systems Organization and Architecture (International edition)*, Pearson Education, London, England, UK, 2003. ISBN #0321210808.
 - J. Carpinelli. *Computer Systems Organization and Architecture (LPE – edition for India, Bangladesh, Pakistan, Nepal, Sri Lanka, and Maldives)*, Pearson Education, Delhi, India, 2002. ISBN # 81-7808-268-3.
 - J. Carpinelli. *Computer Systems Organization and Architecture (Korean language edition)*, Pearson Education, Seoul, Korea, 2002. ISBN # 89-5550-111-0.
 - J. Carpinelli. *Computer Systems Organization and Architecture (Mainland China, English-language edition)*, People's Post and Telecommunications and Pearson Education North Asia, Limited, 2001. ISBN # 7-115-09918-9.
- J. Carpinelli and A. Lippel, Eds. *Proceedings of Engineering Education Unbounded: Lifelong Learning Any Time/Any Place*, United Engineering Foundation, New York, June 2000.

- J. Carpinelli and A. Perna. "Strategies for Disseminating Educational Innovations Developed by University Coalitions," in *Innovations 2003: World Innovations in Engineering Education and Research*, iNEER, Arlington, VA, 2003, pp. 257-263. (Invited).
- J. Carpinelli and H. Nassar. "Fault-tolerance for Switching Networks," in *Switching Networks: Recent Advances*, DingZhu Du and Hung Ngo, editors, Kluwer Publishing Company, 2001, pp. 1-23.
- J. Carpinelli and C. B. Wang. "Performance of a New Decomposition Algorithm for Rearrangeable Clos Interconnection Networks under Sub-maximal and No-fault Conditions," in *Advances in Switching Networks*, Frank Hwang and DingZhu Du, editors, American Mathematical Society, 1998, pp. 103-117.

Refereed Journal Articles

- J. Carpinelli and T. Zaman. "Instructional Tools for Designing and Analysing a Very Simple CPU," *International Journal of Electrical Engineering Education*, July 2006, peer reviewed.
- S. Lee and J. Carpinelli. "High-Speed Integer Operations in the Consequent Fuzzy Part and the Defuzzification Stage for Intelligent Control Systems," *International Journal of Intelligent Control Systems*, December 2005, pp. 258-268.
- J. Carpinelli. "The Relatively Simple Computer System Simulator – A Visualization Tool for Computer System Organization and Architecture," *ASEE Computers in Education Journal*, October-December 2004, pp. 36-41, peer reviewed.
- J. Carpinelli and M. Dokachev. "The Wallace Tree Simulator," *ASEE Computers in Education Journal*, July-September 2004, pp. 10-14, peer reviewed.
- H. Nassar, J. Carpinelli, and F. Nada. "Queueing Analysis of an ATM Multichannel Switch Routing Two-class Multimedia Traffic with Two Service Rates," *IEICE Transactions on Communications*, June 2004, pp. 1505-1513, peer reviewed.
- J. Carpinelli. "The Relatively Simple CPU Simulator," *ASEE Computers in Education Journal*, April-June 2002, pp. 20-26.
- H. Nassar and J. Carpinelli. "A Generalized Model for Banyan Networks with Nonuniform Traffic," *IEE Proceedings-Computers and Digital Techniques*, May, 1998, pp. 225-228.
- H. Lee, F. Hwang and J. Carpinelli. "A New Decomposition Algorithm for Rearrangeable Clos Interconnection Networks," *IEEE Transactions on Communications*, November, 1996, pp. 1572-1578.
- J. Carpinelli and Y. Oruc. "Applications of Matching and Edge Coloring Algorithms to Routing in Clos Networks," *Networks*, September, 1994, pp. 319-326.
- J. Carpinelli and Y. Oruc. "On Non-backtracking Matrix Decomposition Algorithms for Routing on Clos Networks," *IEEE Transactions on Communications*, August, 1993, pp. 1245-1251.
- J. Carpinelli and S. Rosenstark. "Bridging the Gap Between Digital Circuits and Microprocessors," *IEEE Transactions on Education*, August, 1993, pp. 334-339.
- J. Carpinelli. "MCCS: A Simulation Tool for Teaching Multiprocessor System Design," *ASEE Computers in Education Journal*, March, 1993, pp. 66-69.
- J. Concepcion, J. Carpinelli, G. Kuo-Petravic and S. Reisman. "CT Fan Beam Reconstruction with a Non-Stationary Axis-of-Rotation," *IEEE Transactions on Medical Imaging*, March, 1992, pp. 111-116.
- R. Chadwick and J. Carpinelli. "A High-Speed Correlator for Spread Spectrum Applications," *International Journal of Electronics*, March, 1992, pp. 373-381.

Refereed Conference Papers

- L. Hirsch, J. Carpinelli, H. Kimmel, R. Rockland, and J. Bloom. "The Differential Effects of Pre-engineering Curricula on Middle School Students' Attitudes to and Knowledge of Engineering Careers," to appear in *Proceedings of the 2007 Frontiers in Education Conference*, Milwaukee, WI, October 2007.

- H. Kimmel, J. Carpinelli, and R. Rockland. "Bringing Engineering into K-12 Schools: A Problem Looking for Solutions?" *to appear in Proceedings of the 2007 International Conference on Engineering Education*, Coimbra, Portugal, September 2007.
- H. Kimmel, J. Carpinelli, R. Cano, and A. Perna. "A U.S. Working Model for the K-16 Engineering Pipeline," *to appear in Proceedings of the 2007 International Conference on Engineering Education*, Coimbra, Portugal, September 2007.
- L. Hirsch, J. Carpinelli, H. Kimmel, R. Rockland, and J. Bloom. "The Differential Effects of Female Only vs. Co-ed Enrichment Programs on Middle School Students' Attitudes to Science, Mathematics and Engineering," *Proceedings of the 2007 American Society for Engineering Education Conference*, Honolulu, HI, June 2007.
- J. Carpinelli, L. Hirsch, H. Kimmel, A. Perna, and R. Rockland. "A Survey to Measure Undergraduate Engineering Students' Attitudes toward Graduate Studies," *Proceedings of the First International Conference on Research in Engineering Education*, Honolulu, HI, June 2007.
- H. Kimmel, J. Carpinelli, R. Cano, and A. Perna. "The K-16 Engineering Pipeline: A Working Model," *Proceedings of the ASEE Middle Atlantic Section Spring 2007 Conference*, Newark, NJ, April 2007.
- J. Finne, J. Carpinelli, and W. Barnes. "The Transition from the 8085 to the 'Modern' World," *Proceedings of the ASEE Middle Atlantic Section Spring 2007 Conference*, Newark, NJ, April 2007.
- J. Carpinelli and A. Perna, "Best Practices in Freshman Engineering Design at the New Jersey Institute of Technology," *Proceedings of the 2006 International Conference on Engineering Education*, San Juan, PR, July 2006.
- H. Kimmel, J. Carpinelli, L. Burr-Alexander, and R. Rockland, "Bringing Engineering into K-12 Schools: A Problem Looking for a Solution?" *Proceedings of the 2006 American Society for Engineering Education Conference*, Chicago, IL, June 2006.
- J. Carpinelli, R. Calluori, V. Briller, E. Deess, and K. Joshi, "Factors Affecting Student Performance and Satisfaction in Distance Learning Courses," *Proceedings of the 2006 American Society for Engineering Education Conference*, Chicago, IL, June 2006.
- R. Calluori, V. Briller, J. Carpinelli, P. Deess, and K. Joshi, "A Comparison of Web software platforms, teaching technology formats, technology training used in Distance Learning courses and their impact on learning outcomes," *Proceedings of the 46th Annual Forum of the Association for Institutional Research*, Chicago, IL, May 2006.
- S. Lee and J. Carpinelli, "VHDL Implementation of a Very High-Speed Integer Fuzzy Controller," *Proceedings of the 2005 IEEE Systems, Man, and Cybernetics Conference*, Honolulu, HI, October 2005, pp. N/A (published on CD ROM).
- J. Carpinelli, V. Briller, J. Valyo, E. Deess, R. Calluori, and K. Joshi, "Effects of a Freshman Engineering Design Experience on Student Performance in a Sophomore Circuits Course," *Proceedings of the 2005 American Society for Engineering Education Conference*, Portland, OR, June 2005, pp. N/A (published on CD ROM).
- J. Carpinelli, V. Briller, C. Saraydar, J. Frank, E. Deess, and R. Calluori, "A Needs Assessment for a Sophomore Circuits Course for Electrical and Computer Engineering Students," *Proceedings of the ASEE Middle Atlantic Section Spring 2005 Conference*, Teaneck, NJ, April 2005, pp. N/A (published on CD ROM).
- J. Carpinelli, "Twenty-five Years of Engineering Education: 1992 – 2017," *Proceedings of the 2004 International Conference on Engineering Education*, Gainesville, FL, October 2004, pp. N/A (published on CD ROM).
- J. Carpinelli, L. Burr-Alexander, D. Hanesian, H. Kimmel, and R. Sodhi. "The Pre-Engineering Instructional and Outreach Program at the New Jersey Institute of Technology," *Proceedings of the 2004 International Conference on Engineering Education*, Gainesville, FL, October 2004, pp. N/A (published on CD ROM).
- V. Briller and J. Carpinelli. "Reducing the Withdrawal Rate in Distance Learning Courses," *Proceedings of the 2004 American Society for Engineering Education Conference*, Salt Lake City, UT, June 2004, pp. N/A (published on CD ROM).

- J. Carpinelli, A. Clements, J. Demel, S. Seidman, and W. Zobrist. "Discussion Panel: Writing a Textbook," to appear in *Proceedings of the 2003 Frontiers in Education Conference*, Westminster, CO, November, 2003.
- J. Carpinelli and M. Dokachev. "The Wallace Tree Simulator," *Proceedings of the 2003 American Society for Engineering Education Conference*, Nashville, TN, June 2003, pp. N/A (published on CD ROM).
- V. Briller, J. Carpinelli, P. Deess, R. Calluori, and C. Gonzalez-Lenahan. "The Effectiveness of the Educational Learning Assistants Program for Student Retention," *Proceedings of the 2003 American Society for Engineering Education Conference*, Nashville, TN, June 2003, pp. N/A (published on CD ROM).
- J. Carpinelli. "The Very Simple CPU Simulator," *Proceedings of the 2002 Frontiers in Education Conference*, Boston, MA, November, 2002, pp. T2F.11-14.
- J. Carpinelli and A. Perna. "Extending the Work of the Engineering Education Coalitions," *Proceedings of the 2002 International Conference on Engineering Education*, Manchester, England, UK, August, 2002, pp. N/A (published on CD ROM), peer reviewed. (Invited)
- V. Briller and J. Carpinelli. "A Comparative Analysis of Student Performance in Lower Division Computer Science Courses in Face-to-Face Mode vs. Distance Learning Mode," *Proceedings of the 2002 ASEE Annual Conference*, Montreal, Quebec, Canada, June, 2002, pp. N/A (published on CD ROM), peer reviewed.
- J. Carpinelli and F. Jaramillo. "Simulation Tools for Digital Design and Computer Organization and Architecture," *Proceedings of the 2001 Frontiers in Education Conference*, Reno, NV, October, 2001, pp. S3C.1-5, peer reviewed.
- J. Carpinelli and V. Briller. "Distance Learning Instruction: As Effective as Face-to-face Instruction?" *Proceedings of the International Conference on Engineering Education*, Oslo, Norway, August, 2001, pp. 6E8.8-10, peer reviewed.
- J. Carpinelli and A. Perna. "Engineering Education Coalitions: Perspective from a Partner University," *Proceedings of the International Conference on Engineering Education*, Oslo, Norway, August, 2001, pp. 6E2.12-14, peer reviewed.
- J. Carpinelli. "The Relatively Simple CPU Simulator," *Proceedings of the 2001 ASEE Annual Conference*, Albuquerque, NM, June, 2001, pp. N/A (published on CD ROM), peer reviewed.
- J. Carpinelli. "On Similar Networks and the Minimality of Waksman Networks," *Proceedings of the 1996 Conference on Information Sciences and Systems*, Princeton, NJ, March, 1996, pp. 211-215, peer reviewed.
- H. Nassar and J. Carpinelli. "Design and Performance of a Fault Tolerant Clos Network," *Proceedings of the 1995 Conference on Information Sciences and Systems*, Baltimore, MD, March, 1995, pp. 810-815, peer reviewed.
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- M. Ahmad and J. Carpinelli. "A Methodology for Designing Spacecraft Onboard Processing Systems," *Proceedings of the AIAA Computers in Aerospace VII Conference*, Monterey, CA, October, 1989, pp. 189-199, peer reviewed.
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- C. Christou and J. Carpinelli. "Determination of Optimal Cache Size through Modeling and Simulation," *Proceedings of the Twentieth Pittsburgh Conference on Modeling and Simulation*, May, 1989, pp. 1267-1271, peer reviewed.
- J. Carpinelli and Y. Oruc. "Matrix Decomposition Algorithms for Dynamic Topology Reconfiguration in Parallel Computers," *Proceedings of the Fourth International Conference on Supercomputing*, Santa Clara, CA, April, 1989, pp. 327-332, peer reviewed.
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- J. Carpinelli and Y. Oruc. "Applications of Edge-Coloring Algorithms to Routing on Parallel Computers," *Proceedings of the Third International Conference on Supercomputing*, Boston, MA, May, 1988, pp. 249-257, peer reviewed.
- C. Lin, J. Carpinelli and M. Singh. "APAP: The Arithmetic Pipeline Analysis Package," *Proceedings of the Nineteenth Annual Pittsburgh Conference on Modeling and Simulation*, May, 1988, pp. 1101-1105, peer reviewed.
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Proposals and Grants

- L. Simon, R. Dave, P. Armenante, and J. Carpinelli, National Science Foundation, *An RET Site for C-SOPS*, \$80,000, 2007.
- J. Carpinelli. ExxonMobil Foundation, *Bernard Harris Summer Science Camp*, \$80,000, 2007.
- R. Rockland, J. Carpinelli and H. Kimmel, National Science Foundation, *Medibotics: The Merging of Medicine, Robotics, and IT*, \$1,050,815, 2007-2010.
- J. Carpinelli and D. Misra, National Science Foundation, *An REU Site for Computer Networking and Security*, \$300,000, 2006-2009.
- V. Briller, E. Deess, and J. Carpinelli, CARANA Corporation (subcontract under USAID grant), *EdNet*, \$60,000, 2004-2007.
- J. Carpinelli (PI), National Science Foundation, *Gateway Engineering Education Coalition Supplemental Extension Subcontract*, \$66,043, 2003.
- J. Carpinelli (PI), National Science Foundation, *Gateway Engineering Education Coalition No-cost Extension Subcontract*, \$144,367, 2002-2003
- J. Carpinelli (PI) National Science Foundation, *Gateway Engineering Education Coalition Year 10 Subcontract*, \$203,471, 2001-2002.
- J. Carpinelli (PI), National Science Foundation, *Travel Grant to Attend the 2001 International Conference on Engineering Education*, \$800, 2001.
- J. Carpinelli (PI), New Jersey Commission on Higher Education (NJ-TOWER subcontract), *Development of an Honors Distance Learning Course in Computer Architecture*, \$4,500, 2001.

- J. Carpinelli (PI) National Science Foundation, *Gateway Engineering Education Coalition Year 9 Subcontract*, \$230,472, 2000-2001.
- J. Carpinelli (PI) and A. Lambiase, Altera Corporation, *Altera University Program*, \$70,000, 2000.
- A. Perna and J. Carpinelli (CP), National Science Foundation, *Gateway Engineering Education Coalition Year 8 Subcontract - Information Technology*, \$16,936, 1999-2000.
- J. Carpinelli (PI), NJIT Provost's Challenge Grant, *Enhancement of a Microprocessor Simulator for Undergraduate Computer Architecture Students*, \$10,000, 1999.
- J. Carpinelli (PI) and A. Lambiase. Altera Corporation, *Altera University Program*, \$176,153, 1999.
- A. Perna and J. Carpinelli (CP), National Science Foundation, *Gateway Engineering Education Coalition Year 7 Subcontract - Information Technology*, \$20,494, 1998-1999.
- J. Carpinelli (PI) and A. Lambiase, Altera Corporation, *Altera University Program*, \$65,170, 1997-1998.
- J. Carpinelli (PI), National Science Foundation (Gateway Engineering Education Coalition), *Implementation of Asynchronous Learning Networks in an Undergraduate Computer Architecture Course*, \$26,442, 1997-1998.
- R. Hiltz, A. Lippel, J. Carpinelli (CP), et. al. *From Virtual Classroom® to Virtual University: Institutionalizing Asynchronous Learning Networks at NJIT*, \$450,000, Alfred P. Sloan Foundation, 1997-1999.
- J. Carpinelli (PI). *Altera Development Tools for Higher Education Program, Phase II+*, \$5,000, Altera Corporation, 1995.
- J. Carpinelli (PI). *Altera Development Tools for Higher Education Program, Phase III*, \$207,000, Altera Corporation, 1994-1995.
- J. Carpinelli (PI). *Altera Development Tools for Higher Education Program, Phase II*, \$4,000, Altera Corporation, 1993.
- J. Carpinelli (PI). *Altera Development Tools for Higher Education Program, Phase I*, \$42,000, Altera Corporation, 1992.
- Y. Bar-Ness, J. Carpinelli (CP), et. al. *Proposal Preparation for Mobile Detection Assessment Response System (MDARS) Communication and Control Subsystem (CCSS)*, \$9,500, Picatinny Arsenal, 1991.
- J. Carpinelli (PI) and P. Engler. *Computerized Registry for the BICU*, \$1,500, St. Barnabas Hospital, Burn Unit, 1991.
- J. Carpinelli (CP) and S Reisman. *Stress Distribution*, \$6,531, UMDNJ, 1989.
- J. Carpinelli (PI). *Intel Microprocessor Development System* (equipment donation), \$14,050, Bellcore, 1988.
- J. Carpinelli (PI) and S. Rosenstark. *Programmable Array Logic System*, Excellence Initiative, \$15,000, 1987.

Peer reviewing activity

- Referee for several journals and conferences, including:
 - *IEEE Transactions on Parallel and Distributed Systems*
 - *IEEE Transactions on Computers*
 - *IEEE Transactions on Communications*
 - *IEEE/ACM Transactions on Networking*
 - *ASEE Journal of Engineering Education*
- Reviewer for textbooks for HBJ-Saunders, Addison-Wesley, and John Wiley, Inc.

Professional Societies

- Member, International Network for Engineering Education Researchers (iNEER)
- Senior Member, IEEE
- Senior Member, IEEE Education Society
- Senior Member, IEEE Computer Society
- Member, ASEE

G. Other activities

- Member, New Jersey President's Council Working Group on the American Diploma Project
- Member, ASEE Middle Atlantic Section Spring 2007 Conference Planning Committee
- Secretary and Member, Awards Committee, International Network of Engineering Education and Research
- Session Organizer and Chair for *Twenty-five Years of Engineering Education, 1992 – 2017*, International Conference on Engineering Education, October 2004, Gainesville, FL
- Session Organizer and Chair for *Discussion Panel – Writing a Textbook*, Frontiers in Education Conference, November 2003, Westminster, CO
- Session Chair for *Computer Architecture Education*, Frontiers in Education Conference, November 2003, Westminster, CO
- Session Organizer and Chair for *Engineering Education Coalitions - a Retrospective*, International Conference on Engineering Education, August 2002, Manchester, UK
- Session Chair for *Advanced Classroom Techniques 2*, Frontiers in Education Conference, October 2001, Reno, NV
- Session Organizer for *Engineering Education Coalitions*, International Conference on Engineering Education, August 2001, Oslo, Norway
- Member of the Organizing Committee for *Engineering Education Unbounded: Lifelong Learning Any Time/Any Place*, July 1999, Santa Clara, CA
- Session Chair for *Engineering Education Unbounded: Lifelong Learning Any Time/Any Place*, July 1999, Santa Clara, CA
- Session Chair for the *1995 Conference on Information Sciences and Systems*, March, 1995, Johns Hopkins University, Baltimore, MD
- Member of the Program Committee for the *ASEE Fall 1993 Middle Atlantic Section Meeting*, November, 1993, New Jersey Institute of Technology
- Session Organizer and Chair: *The Partners in Learning Program*, presented at the *ASEE Fall 1993 Middle Atlantic Section Meeting*, November, 1993, New Jersey Institute of Technology