

Curriculum Vitae

John P. H. Steele, PhD, PE
Assistant Professor - Engineering Division
Colorado School of Mines
Golden, Colorado 80401

I Personal Data

Home Address
Denver, Colorado

II Education

- 1988 **Ph.D.** Engineering, University of New Mexico
1986 **M.S.** Mechanical Engineering, University of New Mexico
1970 **B.S** Physics, *cum laude*, New Mexico State University

III Work Experience

- 1996-**Present** *Tenured Assistant Professor*
Engineering Division, Colorado School of Mines
- 1989-96 *Tenure Track Assistant Professor*
Engineering Department / Division, Colorado School of Mines
- 1988-89 *Visiting Professor*
Department of Engineering, Colorado School of Mines. Taught Vibrations and Mechanical Design Lab.
- 1987-88 *Project Engineer for Advantage Production Technology*
Responsibilities included design of robots for clean room applications and supervision of engineers working on various aspects of the project. This project included hardware and software development for manipulators for handling 200-mm wafers in state-of-the-art silicon epitaxy furnaces and HF etching operations. Hardware involved design and development of wafer handling end effectors and use of linear air bearing motors. Software development included system control, sensor data acquisition for both control and system state monitoring, and the user interface. All code was written in C.
- 1984-87 *Research Assistant*
Robotics Research Laboratory, Department of Mechanical Engineering, University of New Mexico and Sandia National Laboratories. At Sandia, I was responsible for the mechanical and control software development of a mobile robot capable of global path planning and real-time avoidance of obstacles. The hardware included an omnidirectional platform with individual wheel motor control, distributed control and user interfaces, radio communications, and a laser light obstacle sighting system. I wrote the motor control code, the trajectory planning, the global path planning code, and the realtime obstacle avoidance code. Code was written in LISP (Scheme Lisp) and C. I was also the system manager for two UNIX workstations.
- 1983-84 *Instructor*
Taught Engineering Dynamics, and FORTRAN programming

1982-84 *Research Assistant*

Tribology Program, Department of Mechanical Engineering, University of New Mexico. Designed hydrostatic bearings, a multi-pass surface measurements system and did FEA of epoxy based radial mechanical face seals.

1973-81 *Apprentice/Journeyman Pipefitter and Welder*

United Association of Plumbers and Steamfitters, Local #367, Anchorage, Alaska. Certified for SMAW and GTAW. Worked on many large industrial piping jobs including the Valdez terminal of the Alaska Pipeline.

1972-73 *Cartographer*

Alaska Task Force, National Park Service, Anchorage, Alaska. Designed and produced graphics to support NPS proposals for new national parks in Alaska.

1970-72 *Electronic Assembly Methods Engineer and Ferrite-Heads Shop Foreman*

Ampex corporation, Albuquerque, New Mexico. Responsible for production of new ferrite heads for instrumentation tape recorders. Directed a crew of assembly workers doing machining, assembly, and testing.

1967-70 *Co-op with Physical Science Laboratory, Satellite Tracking Program*

New Mexico State University, Las Cruces, New Mexico. Stationed at Cape Kennedy Space Flight Center, Florida, 1968. Involved in telemetry for unmanned launch operations.

IV Membership in Professional Societies

A Membership

- American Society of Engineering Education (ASEE)
- American Society of Mechanical Engineers (ASME)
- American Welding Society (AWS)
- Institute of Electrical and Electronic Engineers (IEEE)- Computer Society
- International Society for Measurement and Control, Senior Member (ISA)
- Society of Automotive Engineers (SAE)
- Society of Mining Engineers (SME)

B Honor Societies

- Tau Beta Pi Engineering Honor Society
- Sigma Xi Research Honor Society

V Professional Activities and Service

A Professional Engineer

Registered Professional Engineer, Colorado
Registration Number 32991

B Professional Activities

B.1 Conferences & Meetings Organizer

- Society of Mining Engineers, Mechanized Mining Committee, program chairman Annual Meeting 2005.

B.2 Technical Reviewer

- Society of Automotive Engineers, Technical Papers Reviewer 1996-present
- IEEE Robotics and Automation International Conference, 1996, 1997
- IEEE Robotics and Automation Transactions
- BioTechnology Center, Research Triangle North Carolina, 1994.
- Artificial Neural Networks in Engineering Conference 1992-2003.
- ASME Offshore Mechanics Journal, 2001.
- Colorado Advanced Software Institute 1990-1997.

B.3 External Program Reviewer

- Idaho National Engineering and Environmental Laboratories, 2000.

C Student Design Projects

- Host, SAE Walking Machine International Competition, April, 2002.
- Faculty Advisor to SAE Walking Robot Team, 1997-2003.
- Faculty Advisor to SAE Mini Baja Race Team, 1994-1998.
- Faculty Advisor to ASME Human Powered Vehicle Competition, 1996-97.

D Professional Societies - Offices

- Board of Directors, Machinery Failure Prevention Technology Society, 1995-99.
- Advisory Committee, International Journal of Smart Engineering System Design, 1996-2003.
- Director of Professional Development, American Society of Mechanical Engineers, Region XII, and on the Board of Directors, Region XII, 1995-96.
- Board of Directors, Colorado Section, American Society of Mechanical Engineers, 1994-96.
- Chairman, Colorado Section, American Society of Mechanical Engineers, 1993-94.
- Vice-Chairman, Colorado Section, American Society of Mechanical Engineers, 1992-93.
- Secretary, Colorado Section, American Society of Mechanical Engineers, 1991-92.
- Treasurer, Colorado Section, American Society of Mechanical Engineers, 1990-91.

VI Teaching and Related Activities

A Courses Taught

- EGGN 235 Engineering Field Session
- EGGN 250 Multidisciplinary Engineering Laboratories I
- EGGN 315 Dynamics
- EGGN 350 Multidisciplinary Engineering Laboratories II
- EGGN 400 Introduction to Robotics
- EGGN 407 Introduction to Feedback Control Systems
- EGGN 411& EGGN 411L - Machine Design & Lab
- EGGN 413 Computer Aided Engineering
- EGGN 450 Multidisciplinary Engineering Laboratories III
- EGGN 475 Design Laboratory
- EGGN 478 Engineering Dynamics
- EGGN 487Motor Controls Laboratory
- EGGN 491 Senior Capstone Design I
- EGGN 492 Senior Capstone Design II
- EGGN 499 Independent Study
- EGES 501 Advanced Engineering Measurements
- EGES 518 Robot Mechanics and Control
- EGES 598 Real-time Control
- EGES 599 Independent Study
- EGES 619 Intelligent Machine Condition Monitoring and Failure Prediction

B Course Development Activities

Senior Design, EGGN 491-2 I was one of the two original Senior Design Faculty and helped develop and shape the course in its early stages. I have been an active supporter of the design curriculum for as long as I have been at CSM. I have developed and managed a large number of senior design projects, many of which involved external industrial sponsors. We have designed and built prototype systems and software for a variety of projects. Many of these projects were competitions sponsored by the Society of Automotive Engineers and American Society of Mechanical Engineers. Other clients have included Colorado State Parks Division, Lockheed Martin, Caterpillar, Coors, U. S. Department of Justice, Colorado Advanced Materials Institute, U.S Veterans Administration Hospital, and CU Health Sciences.

EGGN 350 Multidisciplinary Engineering Lab II - as a faculty member in MEL 2, I updated and enhanced a number of the experiments for the Strengths portion of this course.

EGGN 400 Introduction to Robotics - since taking over this course I have revamped it as a hands-on learning lab, and obtained CSM Tech Fee grant money, \$7600, to provide microprocessors, sensors, and robot construction materials so students can build and experiment with real robots.

I submitted another Tech Fee Proposal in October 2003 to request Bluetooth wireless communications and CMUCAMs for the course.

EGGN 450 Multidisciplinary Engineering Lab III - as a faculty member in MEL 3, I proposed the idea of using bicycles as the testbed for a mobile dynamics experiment, provided the documentation for the analysis of the dynamics of the system, and generated presentation materials on GPS for use in the course.

EGES 518 Robot Mechanics and Control - I have developed the curriculum for this course using Mathematica software and provided many industrial examples for use in the course.

EGES 619 Intelligent Machine Monitoring and Failure Prediction - I have developed the information for this course from my research in machine condition monitoring and activities associated with a number of conferences and research organizations.

C Teaching Research Activities

Educational Robotics We have developing a program that uses robotics as a hook to get students interested in Engineering, Mathematics and Science. There are several aspects to this program.

- RoboCamps and RoboWeekends for middle and high school students
- NEAT (New Engineering and Applied Technology) for K12 teachers
- K12 Outreach
- Constructionist Learning for Undergraduates

RoboCamps and RoboWeekends is a unique approach to the teaching of robotics at the middle school level. Students teams (with a maximum of fourteen) are challenged to design and build robots to solve a specific problem, e.g., mining on an asteroid. Lego kits and Handy Cricket microprocessors are used for the hardware, and Logo, a form of LISP, is used as the programming language. These courses, RoboCamps in the summer and RoboWeekends during the school year, have universally been praised as the best opportunity for middle school kids to learn about technology. The program is run through SPACE and has been one of their big success stories. This program has been gaining notoriety for the past three years, and we are now getting inquiries from other parts of the country about this program on a regular basis.

NEAT is our summer workshop for K12 teachers. This workshop is focused on teaching the teachers about technology and engineering with the goal of helping them to develop curriculum they can take back into their classroom. This program has been going for four years and we have graduated a total of fifty teachers from the program. DPS, Cherry Creek Adams County and Joes Colorado all have programs that used the NEAT Workshop as a spring board to their program.

We do K12 outreach in the Denver Metro area using Engineering Senior Design Teams. The team is challenged to design a robot for use in presentations to classrooms during their second semester. The idea is to show off some *cool* technology using a robot and communicate the message that if students want to work with this technology they must study mathematics and science. We have visited more than twenty schools in the last four years, and now some of those students are considering Mines for their college education.

VII Research

A Unfunded Projects

- RoboCamps and RoboWeekends
 - These camps for middle and high school students are self-funded. They have been very popular and we are getting inquiries from both in-state and out-of-state about how to implement such a program.
- K12 Outreach
 - Using teams of senior design students, we have built robots and given presentations in a large number of metro-area schools (DPS, Jeffco, Cherry Creek, Adams County). The goal of these presentations is to generate and enhance the interest in young students for the study of mathematics, science, and engineering.
- Development of a Machining Course for Mechanical Engineers at Warren Tech & Red Rocks
 - I am working with Mike Payne at Warren Tech and Phil Tyler, a CSM senior, to develop an creditable elective course in advanced machining practice that will provide our students to learn more about machining practices and get hands-on experience build engineered parts. The current plan calls for the student to design and build an arbor press.

B Funded Projects

- CSM Contract 4-42232, "Evaluations of Stereovision for Surface Mine Safety", NIOSH Spokane, \$5,655, 2003.
- NSF "GK-12 Learning Partnerships: Creating Problem Centered, Interdisciplinary Learning Environments.", \$495,347. I am a senior fellow on this grant, PI - Barb Moskal, 2003-2006.
- "New Engineering and Applied Technology Workshop", Mikkelson Foundation and CSM Foundation, \$13,000, 2003.
- CSM Contract 4-42111, "Development of Smart Bits", Department of Energy, and Stolar Horizon Corporation, \$295,000, PI, 2001-2004.
- "New Engineering and Applied Technology Workshop", Mikkelson Foundation and CSM Foundation, \$28,000, 2002.
- NSF DMI-0116753, National Science Foundation, MRI Program, "Acquisition of Instrumentation for Vision Based Control of Welding and Droplet Manufacturing Processes", \$244,412, Co-PI, 2001 to 2003.

- “New Engineering and Applied Technology Workshop”, Mikkelson Foundation and CSM Foundation, \$28,000, 2001.
- CSM Contract 4-42043, “Stereovision and 3D Modeling for Remote Operation of Mining Equipment”, National Institute of Occupational Safety and Health, Western Mining Resource Center, \$200,000, PI, 1999-2004.
- CSM Contract 4-48254, Colorado Advanced Materials Institute, “Design of Highway Crash Barriers Using Waste Tires”, \$45,000, 2000.
- CSM Contract 4-41786, Colorado Advanced Materials Institute, “Development Of In-Service Condition Monitoring Sensors For Composite Materials Using Optical Time Domain Reflectometry”, \$75,000, 1998.
- NSF Contract EEO-9700775, National Science Foundation, “Combined Research-Curriculum Development Program Health Monitoring”, \$400,000, Co-PI, 1996 to 1999.
- CSM Contract 4-41532, Idaho National Engineering Laboratories, “On-Line Machine Health Monitoring”, \$80,000, PI, 1995.
- CSM Contract 4-41360, Sandia National Laboratories, “System Health Assessment and Failure Prediction”, \$249,000, PI, 1993 to 1996.
- CSM Contract 4-41461, Sandia National Laboratories, “Network-Based Interactive Robot Control Programming Tools”, \$40,412, PI, 1994-97.
- CSM Contract 4-41168, 4-41234 MACSS - MTS Systems, “Development of Artificial Neural Networks for Process Monitoring of Epoxy Resin Cures”, \$409,000, Co-PI.
- CSM Contract 4-49411, “Survey of Welding Automation and Robotic Processes”, Construction Industries Institute, \$50,000, Co-PI.
- CSM Contract 4-41065 “Undergraduate Research in Intelligent Automated Systems”, NSF, Research Experience For Undergraduates, \$85,000, Co-PI.

C Students advised

- M.S.** Marie Mornis, “The effect of contact tube deterioration on GMAW process stability”, T4094, 1992.
- M.S.** Ismail Arit, “Design and simulation of an object oriented robot control system”, T4469, 1993.
- M.S.** Deepa Mishra, “Application of artificial neural networks in monitoring the curing of epoxies”, T4512, 1994.
- M.S.** Hui Zhang, “Epoxy cure monitoring with artificial neural networks”, T4345, 1995.
- M. E.** Todd Rubano, “Development of a Real-Time Data Collection System Using VMEbus with Ethernet Connections to a Remote Host”, ER4779, 1995.
- M.S.** Mark J. Muzal, “Signal-to-noise ratio enhancement in the presence of pulse width modulation interference”, T4912, 1996.
- M.S.** Tim Seifert, “Machine condition monitoring using fuzzy logic and statistical techniques”, T4954, 1996.
- M.S.** Galen Brown, “Development of on-line real-time system health monitoring for remote hydraulic pumps using an expert system”, T4957, 1997.
- M.S.** Michelle Archuleta, “Oil condition monitoring of a hydraulic pump using particle counting”, T5007, 1997.

- M.S.** Benjamin T. Railsback, “Development of in-service condition monitoring sensor for composite materials using serpentine continuous wave through-transmission”, T5385, 2000.
- M.S.,PhD** Mark Whitehorn,(co-advisor with Chris Debrunner), “3D modeling with stereo vision in underground mines”, T5517, 2001.
- M.S.** Bryan Walter, “Extending the Capabilities of the RCS for Teaching Math and Science”, Engineering Report, 2003.
- M.S., PhD** Benjamin H. Miller, “Smartbit : in-situ bit/rock interface monitoring device”,, T5730, 2003.
- M.S.** Matt Krugman, current student
- M.S.** Kegan Baird, current student
- M.S.** James Dimagiba, current student
- M.S.** Matt Dawson, current student
- PhD** Benjamin H. Miller, (co-advisor Ugur Ozbay), current student
- PhD** Mark Whitehorn,(co-advisor Chris Debrunner), current student

D Other Research Contributions

D.1 Service On Graduate Committees

I have been or am presently a thesis committee member for the following graduate students

1. Bill Strickland, “Characterization of Ultrasonic Rangers for Semi-Autonomous Operation of an Underground Load/Haul/Dump Vehicle”, T3798, 1990.
2. Ismail Arit, “3D Computer Modelling of Large-Scale Strain Caused by Ridge Collision in Southern Chile”, T4124, 1991.
3. Liu Ke, “Neural Networks for Continuous Function Mapping”, T4378, 1993.
4. Hong Chang, “An Algorithm for Solving The Ultimate Pit Problem with Spatial Consideration and a Parallel Implementation”, T4837, 1996.
5. Mark Thomas, “A quantitative model of competitive strategy”,, T5156, 1998.
6. Alex Q. Bracarense, “Shielded metal arc welding electrode heating control by flux ingredients substitution”, T4599, 1994.
7. Mark Ritland, ABD
8. Antonio Nieto Vega, “Development of a real-time proximity warning and 3-D mapping system based on wireless networks, virtual reality graphics, and GPS to improve safety in open-pit mines”, T5565, 2001.
9. Josh Lisle, “Design and evaluation of a virtual reality interface for mobile robot control using a small display”, T5670, 2002.
10. Jason Luck, “Real-time markerless human motion tracking using linked kinematic chains”, T5715, 2003, “Registration of range images through the use of a hybrid simulated annealing and iterative closest point algorithm”, T5263,1999.

11. Qiang He, “Automatic Pathological Gait Classification”, T5787, 2003.
12. Stacy Carrera, Ph. D., Materials Science, current
13. Glenn Ross, current
14. Mark Richards, M.S., Metalurgy, current
15. Nick Flannery, M.S., current
16. Sergey Reznik, M.S., current
17. Rick Stilson, M.S., current

D.2 Interdisciplinary Interactions - Centers Activities

I am an active member of the following CSM Centers

- Center for Automation, Robotics and Distributed Intelligence
- formally Center for Robotics and Intelligent Systems
- Center for Mine Mechanization and Automation
- Associate Director
- Center for Welding, Joining and Coating Research
- Earth Mechanics Institute
- Western Mining Resource Center
- Project PI, 3D Stereo for Mine Safety Applications

VIII Publications

A Refereed Journals

1. “3D Modeling of Underground Mines using Temporal Integration of Stereo Range Data”, M. Whitehorn, C. Debrunner, J. P. H. Steele and T. Vincent, *SME Transactions*. June 2003, in review.
2. “Robotics for Underground Hardrock Mining”, J. Steele, T. Vincent, C. Debrunner, and M. Whitehorn, *SME Mining Engineering Transactions*, recommended for publication with revisions.
3. “Chip Formation in Mechanical Excavation: An indicator of Machine Performance”, J. P. H. Steele, U. M. Ozbay, and , and B. H. Miller, *TRANSACTIONS of the Society of Mining Engineers*, Vol. 314, 2003.
4. “Stereo Vision in LHD Automation”, M. Whitehorn, T. Vincent, C. Debrunner, and J. Steele, *IEEE TRANSACTIONS on Industry Applications*, Vol. 39, No. 1, pp. 21-29, Jan./Feb. 2003.
5. “Customized Assistive Device for Posture and Locomotion for a Dog with Cerebellar Ataxia”, C. Riegger-Krugh, T. Langer, Z. Wiemer, J. P. H. Steele, *Journal of Sports Phys Therapy* Vol. 30. No. 1 January 2000, pp. A-15-A-16.

6. "Fiber Optic Sensor Development for Real-Time In-Situ Composite Cure Monitoring", Y. M. Liu, C. Ganesh, J.P.H. Steele, and J. E. Jones, *Journal of Composite Materials*, Vol. 31 No. 1/1997, pp. 87-102.
7. "A Intensive Instrumentation and Computer Data Acquisition Laboratory", Steele, Bahn, Arit, & Ganesh, *Computers in Education Journal*, Vol. VI, No. 1, Jan-Mar 1996, pp. 2-6.
8. "Control and Scale Model Simulation of Sensor-Guided LHD Mining Machines", John Steele, C. Ganesh, and Arnold Kleve, *IEEE Transactions on Industrial Applications*, Vol. 29, Issue: 6, 1993.
9. "Predicting Trajectories Using Recurrent Neural Networks", Gordon, A., John P. H. Steele, and Kathy Rossmiller, *Heuristics; The Journal of Knowledge Engineering*, Vol. 5, No. 3, Fall 1992, pp. 80-89.
10. "Control of Mobile Robots", John P.H. Steele and Nader D. Ebrahimi, *International Journal of Robotics and Automation*, Vol. 1 No. 2, pp. 40-46, 1986.

B Published in Conference Proceedings

1. "Development Of Sensing And Actuation For Automation Of Welding And Droplet Manufacturing", Feras Al-Bayat, Chris Debrunner, J.-P. Delplanque, Tom Grover, Chris Mnich, Nathan Peterson, John P. H. Steele, Tyrone L. Vincent, NSF - Design Service and Manufacturing Grantees and Researchers Conference, Dallas TX, January 2004,
2. "Application of Stereo Vision Technology to Mining ", John P. H. Steele, 109th Annual Meeting, Northwest Mining Association, Dec. 2-6, Spokane, WA.
3. "A NEATWorkshop for K-12 Science and Math Teachers", John P. H. Steele and Matt Krugman, National Conference On Educational Robotics, Norman, Oklahoma, June 28 -July 1, 2003, pp 170-173.
4. "Stereo Imaging for Object Detection in Surface Mine Safety Applications", John P. H. Steele, Chris Debrunner, and Mark Whitehorn, CD Paper No. s33a1320p929, Advanced Systems & Technologies Session, CIM 2003, Canadian Institute of Mining Mining Conference & Exhibition, Montreal Quebec, Canada, May 2-8, 2003.
5. "Creating Smart Bits", John P. H. Steele, Benjamin H. Miller, M. Ugur Ozbay, SME 2003, Cincinnati, OH, Feb. 23-26, 2003.
6. "Chip Formation in Mechanical Excavation: An Indicator of Machine Performance", John P. H. Steele, Benjamin H. Miller, and M. Ugur Ozbay, Preprint # 02-122, SME 2002 Annual Meeting, Phoenix AZ, Feb. 2002.
7. "Stereo vision in LHD automation", M. Whitehorn, T. Vincent, C. Debrunner, and J. Steele presented at IEEE, IAS 2001 Annual Meeting, Chicago, Illinois, 2001.
8. "Developing Stereovision and 3D Modeling for LHD Automation", John Steele, Chris Debrunner, Tyrone Vincent, and Mark Whitehorn, 6th International Symposium on Mine Mechanization and Automation, Johannesburg, South Africa, September, 2001, pp 209-216.
9. "LHD Loading: Moving from Teleoperation to Automation", J.P.H. Steele, C.H. Debrunner, T.L. Vincent, and M.A. Whitehorn, Proceedings of the 4th Regional Symposium on Computer Applications in the Mineral Industries, APCOM 2001, Tampere, Finland, 3-5 September 2001, pp 201-211.
10. "Developing Real-time Diagnostics for Cutting Heads on Underground Mining Machines", John P. H. Steele, M. U. Ozbay, and Benjamin Miller, Proceedings of the 4th Regional Symposium on Computer Applications in the Mineral Industries, APCOM 2001, Tampere, Finland, 3-5 September 2001, pp 59-64.

11. "A NEAT (New Engineering and Applied Technology) Workshop for Secondary Teachers", ASEE Annual Conference, Session 2793, June 2001, Albuquerque, NM.
12. "Reduction in Emissions and Noise from a 500cc Snowmobile", D. R. Munoz, J. P. H. Steele, D. Nelson, M. Rivera, T. Babb, C. Callender, A. Giesick, R. Kopp, J. Lau, J. Moosebrugger, B. Morrison, J. Pfahl, S. Reece, SAE Off Highway Congress, Milwaukee, WI, Sept. 2000.
13. Time Dependent Response of Wheelchair Seating, R. A. L. Rorrer, D. J. Blake, J. P. H. Steele, P. Kennedy, T. A. Wise, D. O. Schwartz, Proceedings of RESNA 2000, June 28- July 2, 2000, pp. 438-440.
14. "Robotics for Underground Hardrock Mining" J. P.H. Steele, C. Debrunner, T. Vincent, and M. Whitehorn, 2000 Society of Mining Engineers Annual Conference, Preprint 00-6, April 2000.
15. "Online Machine Health Assessment Using Oil Analysis", John P. H. Steele and Michelle Archuleta, P/PM Technology, Vol. 12, Issue 5, October 1999, pp 36-39.
16. "Comparison Of Body-Seat Interface Pressures With Different Wheelchair Backs And Seats", Donna J. Blake, Patrice M. Kennedy, Cindy E. Poorman, John P. H. Steele, Ronald A. L. Rorrer, Proceedings of the RESNA 99 Annual Conference, Long Beach, CA, June 1999, pp230-232.
17. "Predicting Failure Using Online Oil Condition Monitoring", Michelle R. Archuleta and John P. H. Steele, Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 8, Dagli, Akay, Buczak, Ersoy, & Fernandez Editors, ASME Press, 1998, pp. 697-702.
18. "Intelligent On-line Detection Of Cavitation In Hydraulic Pumps", John P. H. Steele, A Critical Link: Diagnosis to Prognosis - Proceedings of a Joint 51st Meeting of the Society for Machinery Failure Prevention Technology and the 12th Biennial Conference on Reliability, Stress Analysis, and Failure Prevention, April 15-17,1997, Virginia Beach, VA., pp. 121-130.
19. "Strategies for Enhancing Reliability: Automated Condition Monitoring Using Expert Systems to Detect Cavitation in Hydraulic Pumps", John P.H. Steele, Michelle Archuleta, Galen Brown, Roman Kucbel, and Tim Seifert, Eighth Annual Predictive Maintenance Technology National Conference, Indianapolis, IN, December, 1996, Technical Papers - pp. 34-38.
20. "Managing Uncertainty in Predictive Maintenance Systems: A Decision Analysis Approach", Michael R. Walls and John P.H. Steele, Eighth Annual Predictive Maintenance Technology National Conference, Indianapolis, IN, December, 1996, Technical Papers - pp. 48-53.
21. "Detecting Cavitation in Hydraulic Pumps Using Artificial Neural Networks", John P. H. Steele and Michelle Archuleta, Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 6, Dagli, Akay, Chen, Fernandez, & Ghosh, Editors, ASME Press, 1996, pp. 909-914.
22. "Fuzzy Logic Processing and Dynamic Alarm Handling for Real-Time Machine Health Monitoring", Tim D. Seifert and John P. H. Steele, Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 6, Dagli, Akay, Chen, Fernandez, & Ghosh, Editors, ASME Press, 1996, pp. 231-236.
23. "System Health Assessment for Robots in Critical Environments", John P. H. Steele, Michelle Archuleta, Galen Brown, Tom Drouillard, Dirk Schlieff, Tim D. Seifert, in the Proceedings of Robots for Challenging Environments II, ASCE, Albuquerque, NM, July 1996, pp. 262-275. "System Health Assessment and Predictive Maintenance", John P.H. Steele, Michelle Archuleta, Galen Brown, and Tim Seifert, Seventh Annual Predictive Maintenance National Conference, Indianapolis, IN, December, 1995, pp. T8-19.
24. "Intelligent Process Monitoring for Carbon Fiber/Epoxy Composite Manufacturing", John P. H. Steele, Deepa Mishra, and Chidambar Ganesh, Proceedings of the ASME Materials Division, Vol.2, Intelligent Manufacturing and Material Processing, MD-V01. 69-2, 1995 ASME International Mechanical Engineering Congress and Exposition, San Francisco, CA, November 1995, pp. 899-909.

25. "Application Of A Hierarchical Artificial Neural Network System To Epoxy Cure Process Monitoring", John P. H. Steele, C. Ganesh, Deepa Mishra, and Jerry Jones, ANNIE '94, St. Louis, Nov. 1994.
26. "The Kinetic Characteristics of a Typical Epoxy Resin System", Y. Liu, C. Ganesh, and J.P.H.Steele, 26th International SAMPE Technical Conference, October 17-20, 1994, Atlanta, Georgia.
27. "An Intensive Instrumentation and Computer Data Acquisition Laboratory", J.P.H. Steele, W. Bahn, I. Arit, and C. Ganesh, American Society for Engineering Education Annual Meeting, Edmonton Alberta, Canada, July 1994.
28. "Predicting Degree Of Cure Of Epoxy Resins With Fiber Optic Sensors and Artificial Neural Networks", C. Ganesh, J. P. H. Steele, H. Zhang, D. Mishra, and J. Jones, 38th International SAMPE Symposium, April 1994, Vol. 39, Book 1 of 2, Moving Forward With 50 Years of Leadership In Advanced Materials, Drake, Bauer, Serafine, Cheng, Eds., pp. 883-892.
29. "A New Artificial Neural Systems Architecture and Its Application to Robot Control", Ke Liu and John P. H. Steele, Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 3, Dagli, Burke, Fernandez, & Ghosh, Editors, ASME Press, 1993, pp. 505-510.
30. "Neural Nets For Epoxy Resin Cure Monitoring", C. Ganesh, J. Steele, H. Zhang, D. Mishra, and J Jones, Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 3, Dagli, Burke, Fernandez, & Ghosh, Editors, ASME Press, 1993, pp. 787-792.
31. "Predicting Degree Of Cure Of Epoxy Resins Using Dielectric Sensor Data and Artificial Neural Networks", J. P. H. Steele, C. Ganesh, K. Liu, H. Zhang, and D. Mishra, 38th International SAMPE Symposium, May 1993, Vol. 38, Advanced Materials: Performance Through Technology Insertion, Bailey, Janicki, Haulik, Eds., pp. 1333-1345.
32. "Identifying Objects in Signals Using Cascaded Recurrent Cascade Correlation Neural Networks (CRCC)", John P. H. Steele, Aaron Gordon, and Hong Chang, Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 2, Dagli, Burke, & Shen, Editors, ASME Press, 1992, pp. 477-482.
33. "A Neural Network-Based Object Identification System", C. Ganesh, D. Morse, E. Wetherell, and J.P.H. Steele, Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 2, Dagli, Burke, & Shen, Editors, ASME Press, 1992, pp. 471-476.
34. "Development of An Open Architecture For Intelligent Robot Control", John P. H. Steele and Chidambar Ganesh, Proceedings of the IASTED International Conference on Control and Robotics, M. H. Hamza, Ed., pp. 330-333, Vancouver, British Columbia, Canada, 1992.
35. "A 2-D Vision-Based Robotic Tracking System", Chidambar. Ganesh, John P. H. Steele and Jerry E. Jones, Proceedings of the IASTED International Conference on Control and Robotics, M. H. Hamza, Ed., pp. 282-284, Vancouver, British Columbia, Canada, 1992.
36. "Predicting Trajectories Using Recurrent Neural Networks", Aaron Gordon, John P.H. Steele, and Kathleen Rossmiller, Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 1, Dagli, Kumara, & Shen, Editors, ASME Press, 1991, pp. 365-370.
37. "Control and Scale Model Simulation of Sensor-Guided LHD Mining Machines", John Steele, Arnold Kleve, and C. Ganesh, Proceedings of the 1991 IEEE Industrial Applications Society Annual Conference, Dearborn MI, Oct. 1991.
38. "Modeling and Sensor-Based Control of an Autonomous Mining Machine", John P. H. Steele, Robert H. King, and William Strickland, International Symposium on Mine Mechanization and Automation, Vol. 1, pp. 6-55-6-67, 1990.
39. "Mining and Excavating Systems for a Lunar Environment", W. R. Sharp, J. P. H. Steele, B. C. Clark, Space 90, Albuquerque, NM, April 1990.

40. "An Algorithm With Real-Time Response For Avoiding Moving Obstacles", John P.H. Steele, IEEE 1989 International Conference on Systems, Man, and Cybernetics, Vol. 2, pp. 551-556, Boston, MA, November 1989.
41. "Mobile Robot Path Planning in Dynamic Environments", John P.H. Steele and Gregory P. Starr, IEEE 1988 International Conference on Systems, Man, and Cybernetics, pp. 922-925, August 8-12, 1988, Beijing, China.
42. "Path Planning with Environmental and Kinematic Constraints", John P.H. Steele and Michael J. Roseborough, Third Annual Rocky Mountain Conference on Artificial Intelligence, June 13-15, 1988, Denver, Colorado.
43. "Path Planning and Heuristics For Mobile Robots In Real World Environments", John P.H. Steele and Gregory P. Starr, IEEE 1987 National Conference on Systems, Man, and Cybernetics, Alexandria, Virginia, October, 1987.
44. "A Mobile Robot Primitive Command Language", John P.H. Steele, Gregory P. Starr, and Jimmie L. Akins, IEEE Workshop on Languages for Automation, August 26-27, 1987, Vienna, Austria.
45. "Current Research At The Robotics Research Laboratory, Mechanical Engineering, University of New Mexico", John P.H. Steele, Gregory P. Starr, Y.C. Park, and Victor J. Johnson, Second Annual Rocky Mountain Conference on Artificial Intelligence, June 18-19, 1987, Boulder, Colorado.
46. "Modeling of Hierarchical Path Planning Strategies For A Conventionally Steered Vehicle", Michael J. Roseborough and John P.H. Steele, IASTED Robotics and Automation, Santa Barbara, CA, May 27-29, 1987.
47. "Modeling And Control Of The Stanford/JPL Hand", Clifford Loucks, Victor Johnson, Peter Boissiere, Gregory P. Starr, and John P.H. Steele, IEEE 1987 International Conference on Robotics and Automation, April 1987.
48. "Hybrid Control Of An Intelligent Mobile Robot", John P.H. Steele, Recent Trends in Robotics: Modeling, Control, and Education, M. Jamshidi, Ed., North-Holland, 1986.
49. "Kinematic Modeling and Graphic Simulation of Path Planning for Mobile Vehicles", Robert Palmquist and John P.H. Steele, IASTED Conference on Modeling and Simulation, Vancouver BC, Canada, June 1986.

C Published Scientific Discussions

1. "Breath of AI: Defining An Intelligent Machine", John P. H. Steele, AI Colorado, Colorado Institute for Artificial Intelligence, Vol. 3, No. 2, Spring 1991

D Published Abstracts

1. "Sensing and Data Interpretation Through Time with Application to Small Lot Manufacturing", Tyrone Vincent and John Steele, (reviewed abstract), DOD Small Lot Intelligent Manufacturing Conference, hosted by Los Alamos National Laboratories, September, 2-3, 2003, Santa Fe NM.
2. "Development of Vision-Based Robotic Welding for Out-of-Position Welding", John P. H. Steele, Tyrone Vincent, Chris Debrunner, and Tom Grover, AWS 2003, Detroit, MI, April 7-10, 2003.

E Book reviews

1. "Fundamentals of Machine Elements", 2nd, Hamrock Jacobson, and Schmid, McGraw Hill, 2003.

F Reports

1. "Smart Bits", J. P. H. Steele, - LIAS Annual Report - 20020930 to Stolar Horizon, Inc., October, 2002.
2. "Stereo Vision for Remote Operation of Mining Equipment", J. P. H. Steele, C. Debrunner, T. Vincent, & M. A. Whitehorn, TR-1-2002, Western Mining Resource Center, CSM, October, 2002.
3. "Alarm Information Extraction for System Health Assessment and Real-time Prediction of System Failure", Tim D. Seifert and John P. H. Steele, 1995, Technical Report LIAS-TR-951215, Laboratory for Intelligent Automated Systems, Dec. 1995.
4. "Machine Health Assessment - Technology Assessment Report", LIAS Technical Report, LIAS-TR-951001.
5. "The Kinetic Characteristics of Shell RSL-1985/W Curing Agent Epoxy Resin System, C. Ganesh, J.P.H. Steele, Y. Liu, and J. Jones, 1993, LIAS-TR-931001, Colorado School of Mines, October, 1993.
6. "In-situ Monitoring of Polymer Resin Cure Process for Composite Materials", C. Ganesh, J.P.H. Steele, and J. Jones, LIAS Technical Report #920901, Colorado School of Mines, November, 1992
7. "Sensing of Contact Tube Wear In Gas Metal Arc Welding", M.A. Mornis, T.P. Quinn, T.A. Siewert, and J.P.H. Steele, National Institute of Standards and Technology Technical Report, NISRIR 3996, September 1992.
8. "The State of Automation In Pipe Welding Equipment", John P. H. Steele, Steven Liu, and Jerry Jones, Report to the Construction Industries Institute", May 1992.
9. "Identifying Objects in Signals Using Recurrent Cascade Correlation Neural Networks", A. Gordon, J. P. H. Steele, and H. Chang, 1992, Report to the Colorado Advanced Software Institute, CASI-TR-92-09, Sept. 1992.
10. "Predicting Trajectories Using Recurrent Neural Networks", Gordon, A. J., and Steele, J. P. H., Technical Report CIAI-TR-91-06, Colorado Institute for Artificial Intelligence, January 1991.

G Other

G.1 Book Chapters

1. Gordon R. Pennock and John P. H. Steele, "Machine Elements", Chapter 22, CRC Engineering Handbook, 5th Ed. to appear.
2. John P. H. Steele and Lloyd E. Antonides, "Mining Machinery", McGraw-Hill Encyclopedia of Science & Technology, 2002 Ed.
3. John P. H. Steele, "Mining Automation", McGraw-Hill Encyclopedia of Science & Technology, 2002 Ed.

IX Presentations

1. “Application of Stereo Vision Technology to Mining”, Northwest Mining Associations 109th Annual Meeting, Spokane WA, Dec. 3, 2003.
2. “Sensing and Data Interpretation Through Time with Application to Small Lot Manufacturing”, Tyrone Vincent and John Steele, invited presentation at the Small Lot Intelligent Manufacturing Conference, hosted by Los Alamos National Laboratories, September, 2-3, 2003, Santa Fe NM.
3. “NEAT Opportunities”, Challenge Middle School, Cherry Creek School District, March 2002.
4. “Using Neural Networks to Detect Horizon on Underground Mining Equipment”, JPH Steele, SME 2002 Annual Meeting, Phoenix AZ Feb. 2002.
5. “Stereo Vision and 3D Modeling for Remote Operation of Mining Equipment”, Denver Mining Club, February 2002.
6. “Intelligent On-Line Detection Of Cavitation In Hydraulic Pumps”, John P. H. Steele, 12th Biennial Conference on Reliability, Stress Analysis, and Failure Prevention, April 15-17,1997, Virginia Beach, VA.
7. “Implementing Machine Health Assessment in DOE Environmental Remediation Projects”, 7th DOE Forum on Robotics for Environmental Remediation, Albuquerque, New Mexico, July 24, 1996.
8. “System Health Assessment Technology: Project Status”, Sandia National Laboratories, April 15, 1996.
9. “System Health Assessment for Hydraulic Robots and Its Application to DOE Waste Management Projects”, Oak Ridge National Engineering Laboratories, March 8, 1996.
10. “System Health Assessment and Predictive Maintenance, 7th Annual Predictive Maintenance National Conference, Indianapolis, IN, December, 1995.
11. “Hierarchical Recurrent Networks and Their Application to Signal Processing”, Signal Processing Workshop, Neural Information Processing Systems Conference, Vail, Colorado, Nov. 30, Dec 1, 1995.
12. “System Health Assessment Applications in Hazardous Waste Remediation”, Sandia University R&D Forum, Feb. 21-23, Albuquerque, NM, 1995.
13. “Using Sparse Data for On-line Interpretation of Health States for Power Distribution Systems”, ACEPS/NSF Workshop, December 14-16, Golden, Colorado 1994.
14. “Control Architecture For An Intelligent Mobile Robot”, John P.H. Steele, ASME Symposium on Robotic, Albuquerque, NM, March 1986.
15. “Analysis of an Epoxy Bedded Mechanical Seal”, John P.H. Steele, AIAA Student Conference, Dallas, Texas, April 1985.

A K12 Outreach Presentations

1. Robocamps put on 7 camps in the Summer of 2003
2. A total of six RoboWeekends Camps were hosted Spring/Fall 2003
3. The K12 Senior Design Teams visited 10 schools in the metro area to give presentations on robotics
The most recently visited schools include:
 - (a) Cory Elementary School, Julie Keppler, (Julie.Keppler@dpsk12.org) November 13, 2003 (4th & 5th grades)

- (b) Mulholm Elementary, Jodie Ackman (jodiea@mac.com), (2nd and 3rd grades)
- (c) Lake Middle School, David Weiss (David.weiss@dpsk12.org) Oct. 30, 2003 (7th& 8th grades)
- (d) Christ the King K-8, John Hager, Oct. 29, 2003 (4-5 & 7th grades)

X Awards & Honors

- Voted the “Outstanding Mechanical Faculty Engineering Division”, May. Class of 2003.
- Voted the “Outstanding Mechanical Faculty Engineering Division”, Dec. Class of 2002.
- SAE International 2002 SAE Walking Machine Challenge, host award, April 27, 2002.
- Faculty Advisor to 4th Place SAE Mini Baja West Team 1996.
- Tau Beta Pi
- Sigma Xi
- Outstanding Service Award, Colorado Section, ASME, 1994.
- First Runner-up Award for Best Technical Merit Paper for Theoretical Development of Artificial Neural Networks, award at ANNIE 93, St. Louis, MO., November 1993.
- Chosen “Outstanding Faculty Member” by CSM Senior Class 1990.
- Exxon Tribology Fellowship, 1982-84.
- The Outstanding Freshman Physics Student, New Mexico State University, 1967.
- Eagle Scout, & Order of the Arrow
- Distinguished Rifleman
- Whos Who In the West

XI CSM Committee Service

A Departmental

- Mechanical Faculty Committee
- Engineering Systems Graduate Program Committee, 2000-2003
- Senior Design Faculty Committee, Chairman, 1991-94
- Computer Utilization Committee, 1990-94
- Design Curriculum Committee, 1989 - 91
- Sensing and Automation Research Committee

B Campus-wide

- CSM RISC Committee 1997-98.

C Other Special Assignments

- I am the coordinator for the EG Strengths lab - making sure the equipment is maintained and ordering the supplies required to support MEL2 and MEL3 as well as senior design teams
- Presenter at Discover CSM Spring & Fall 2002, Spring 2003.

last updated: February 15, 2004