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EDUCATION

- Ph.D. Computer Science, Aug., 1997, Texas A&M University, College Station, TX
Dissertation: *Transferring Assembly Skills to Robots: Learning Force Sensory Patterns and Skills from Human Demonstration*; Richard Volz, advisor
- M.S. Computer Science, May, 1992, Texas A&I University, Kingsville, TX
Thesis: *A Computer Architecture for a Robot Control System*; S. Omar, advisor
- B.S. Engineering Physics, May, 1976, South Dakota State University, Brookings, SD

WORK EXPERIENCE

- Sept., 2009-- Professor
Dept. of Electrical and Computer Engineering
Dept. of Computer Science (joint appointment)
Sinclair School of Nursing (adjunct appointment)
University of Missouri, Columbia, MO 65211
- July, 2006-- Director, Center for Eldercare and Rehabilitation Technology
University of Missouri, Columbia, MO 65211
www.eldertech.missouri.edu
- 2003 – 2009 Associate Professor
Dept. of Electrical and Computer Engineering
Dept. of Computer Science (joint appointment)
Sinclair School of Nursing (adjunct appointment)
University of Missouri, Columbia, MO 65211
- 1997 – 2003 Assistant Professor
Dept. of Computer Engineering and Computer Science
University of Missouri, Columbia, MO 65211
- 1993 – 1997 Assistant Lecturer; Graduate Research Assistant, Robotics Lab
Dept. of Computer Science, Texas A&M University, College Station, TX
- 1991 – 1992 Graduate Research Assistant, Intelligent Controls Lab
Electrical Eng. and Computer Science Dept., Texas A&I University, Kingsville, TX
- 1986 – 1990 Software Consultant, San Diego, CA
Emphasis on real-time control, embedded systems, and device drivers
- 1984 – 1986 Product Manager; Project Leader
Quantitative Technology Corporation, Beaverton, OR
- 1983 – 1984 Technical Support Manager
Infosphere, Portland, OR

- 1980 – 1983 Software Engineering Supervisor
Staefa Control System, San Diego, CA
- 1979 – 1980 Software Engineer
IRT Corporation, San Diego, CA
- 1977 – 1979 Product Engineer
TRW, Corpus Christi, TX
- 1976 – 1977 Systems Engineer
Space Systems Division, Texas Instruments, Dallas, TX
- 1975 Research assistant in an Undergraduate Research Program
Dept. of Physics, Montana State University, Bozeman, MT

HONORS

Tau Beta Pi

General Electric Foundation Academic Fellowship, 1992-1993

U.S. Dept. of Education Graduate Fellowship, 1993-1995

NSF Graduate Engineering Education Fellowship, 1995-1996

Chosen for participation in the Japan-U.S. Graduate Student Forum, Osaka, Japan, Nov., 1996

University of Missouri, Columbia, College of Engineering Faculty Fellowship, 2004-2007

University of Missouri, Columbia, College of Engineering C.W. LaPierre Professorship, 2007-present

University of Missouri, Columbia, Sinclair School of Nursing, Honorary Alumna Award, April, 2013

Texas A&M University, Computer Science & Engineering Dept., Distinguished Former Student Award,
April, 2013

University of Missouri, Columbia, Endowed Professorship, Fall, 2013 - present

PROFESSIONAL SOCIETIES AND CERTIFICATION

IEEE (Institute of Electrical and Electronics Engineers)

AAAI (Association for the Advancement of Artificial Intelligence)

E.I.T. Certificate

TEACHING HIGHLIGHTS

1. Developed a new lab course, CECS 373 Building Intelligent Agents, which provides hands-on experience in creative design and integration of sensing and control, as students build and program small mobile robots.
2. Developed a new lab and project sequence for CECS 332 Software Engineering I, which emphasizes event-driven programming utilizing a home automation testbed. (Funded by the NSF)
3. Developed an outreach program to introduce computer programming to junior high school students, providing hands-on experience in programming robots. (Funded by the NSF) These robots were redesigned and rebuilt in summer, 2004, and were used in 3 workshops for high school students, including a workshop targeting minority students (over 50 minority students attended).
4. Voted Outstanding Teacher by graduating seniors of the Dec., 1999 and Dec., 2000 classes, CECS Dept., College of Engineering, UMC
5. Developed a new introductory course and labs for computer science and computer engineering students, the new CECS 103 Algorithm Design and Programming I, which uses the java language (taught for the first time in Fall, 2002).

6. Redesigned CECS 373 as a 4-credit course with a two-hour lab, now called Building Intelligent Robots, cross-listed as ECE 4340/7340 and CS 4730.
7. Developed a new lab course for Computer Engineering students, ECE 4220 Real Time Embedded Computing, which replaces Software Engineering as a requirement and introduces the C++ programming language and software engineering concepts within the embedded systems context.
8. Fall, 2012: Redesigned the ECE freshman course, ECE 1000, Introduction to Electrical and Computer Engineering to include a Matlab programming lab with projects based on a simple theremin kit (developed by MU students).

COURSES TAUGHT: University of Missouri

CECS 103 Algorithm Design and Prog. I
 CECS 231 Systems Analysis (*Writing Intensive*)
 CECS 301 Robotics and Spatial Intelligence
 CECS 301 Building Intelligent Robots
 CECS 332 Software Engineering I
 CECS 373 Building Intelligent Agents
 CECS 375 Artificial Intelligence I
 CECS 432 Software Engineering II
 CECS 433 Object Oriented Design II
 ECE 1000 Introduction to Electrical and Computer Engineering
 ECE 4220 Real Time Embedded Computer Systems
 ECE 4330/7330 Robotic Control & Intelligence
 ECE 4340/7340 and CS 4730/7730 Building Intelligent Robots
 ECE 8820 Pattern Recognition
 ECE 4870/7870 and CS 4770/7770 Introduction to Computation Intelligence

COURSES TAUGHT: Texas A&M University

CPSC 452 Robotics and Spatial Intelligence

TEACHING AWARDS

Voted Outstanding Teacher by the Dec., 1999 graduating seniors, CECS Dept., College of Engineering, University of Missouri
 Voted Outstanding Teacher by the Dec., 2000 graduating seniors, CECS Dept., College of Engineering, University of Missouri
 Senior Faculty Excellence in Teaching Award, College of Engineering, University of Missouri, March, 2013

STUDENT SUPERVISION

M.S. DEGREES AWARDED

George Chronis, "Akretas: An Intelligent Mobile Robot Video Probe," Aug., 1998.
 Archil Kublashvili, "Collision Detection and Deformation Modeling for Voxelized Polygonal Structures," May, 1999.
 Ritesh Patel, "Constructing a Home Automation Testbed for Event-Driven Programming," Aug., 2002
 Grant Scott, "Face Recognition with Morphological Shared-Weight Neural Networks", May, 2003
 Craig Bailey, "A Sketch Interface for Understanding Hand-Drawn Route Maps," Dec., 2003
 Byron Dill, "Human-Robot Interaction Using a PDA Interface: A Study of Feedback Modes," Dec., 2003
 Justin Satterley, "Determining Direction and Magnitude of Hoof Breakover in Horses Using Accelerometers," May, 2004
 Samuel Blisard, "Modeling Spatial References for Unoccupied Spaced for Human-Robot Interaction," Dec., 2004.

Derek Anderson, "An Investigation of Humanoid Skill Primitives as Sensory Patterns," Aug, 2005
Shuang Wang, "Fuzzified Scoring of the Functional Assessment Instrument," May, 2007
Gaurav Parekh, "Scene Matching between a Quantitative Map and a Qualitative Hand Drawn Sketch,"
December, 2007.
Arthur Charles Huggard, "A Framework for Eldercare Monitoring and Alerting," May, 2008.
Erik Stone, "Adaptive Temporal Difference Learning of Spatial Memory in the Water Maze Task," May,
2009.
Kevin Reed, "Type-1 and Type-2 Fuzzy Systems for Detecting Visitors in an Uncertain Environment,"
August, 2009.
Tanvi Banerjee, "Activity Segmentation with Special Emphasis on Sit-to-Stand Analysis," May, 2010.
Michael Moore, "PIR Sensing Array for Fall Detection," May, 2011.
R. Dane Guevara, "Sensor Networks for Early Illness Detection in the Elderly," August, 2011.
Licet Rosales, "Exploring Passive Heartbeat Detection Using a Hydraulic Bed Sensor System," December,
2011.
Chinonye Echebiri, "Investigation of the Relative Amplitude Method in Detecting Early Illness," May, 2013.
Zhiyu Huo, "Robot Methods for Human-Robot Spatial Language Interaction," May, 2013.

PH.D. DEGREES AWARDED

Samer Arafat, "Uncertainty Modeling for Classification and Analysis of Medical Signals," Dec., 2003
George Chronis, "Sketch-Based Navigation for Mobile Robots Using Qualitative Landmark States," May,
2007
Derek Anderson, "Linguistic Summarization of Human Activity," August, 2010. (co-advised with J. Keller)
Samuel Blisard, "Spatial Referencing Language, Verification, and Common Ground for Human-Robot
Interaction," December, 2010
Fang Wang, "Motion Analysis for In-Home Gait and Balance Assessment Using Inexpensive Video
Sensors," August, 2011.
Shuang Wang, "Change Detection for Eldercare Using Passive Sensing," December, 2011.
Erik Stone, "Unobtrusive In-Home Gait Measurement, Fall Risk Assessment and Fall Detection Using
Depth Imagery," December, 2013.
Tanvi Banerjee, "Combining Activities of Daily Living and Scene Understanding for Continuous
Assessment of Behavior Patterns Using Depth Data," August, 2014 (co-advised with J.
Keller)

UNDERGRADUATE STUDENT ADVISING

C.E.O., "Building a Mobile Robot", Honors Project, B.S., Aug., 1998
B.F., "Competitive Agglomeration Clustering of Qualitative Contact States for an Automotive Transmission
Assembly", Honors Project, B.S., Dec., 1998
L.B., "A Study to Determine the Design Feasibility of a Burn Care Instrument", McNair Scholar, B.S., Dec.,
1999
K.H., "Morphological Neural Network Vision Processing for Mobile Robots", independent study project,
B.S., Dec., 2000
P.P., "Home Automation using X10 and Basic Stamp", Honors Project, B.S. 2001
L.H., "Home Automation Testbed", undergraduate RA, B.S., 2002
M.A., "Low-Level Robot Control Using the Tiny Tiger Microcontroller", undergraduate RA, B.S., 2002
J.S. and K.S., "Visualization of Equine Hoof Movement", capstone project, 2001-2.
L.H., K.C., K.E., "Simultaneous Localization and Map Building System for Prototype Mars Rover,"
capstone project, 2001-2002.
A.C., "Analyzing Hand-Drawn Route Maps," UMC Undergraduate Discovery Fellow, 2001-2002
R.L., "From Remote-Controlled Truck to Vision-Guided Robot," B.S., Aug., 2002
S. B., J. H., B. W., A. H., "Home Automation and Security System," capstone project, 2002.

J.G., D.M., T.D. and A.B., “Robotics Tower,” capstone project, 2004.

M.K., undergraduate honors project, “A Sketch Interface for a Robot Team,” 2004.

J.B., T.E., M.M., and E.R., “2005 IEEE Region 5 Robots Competition,” capstone project, 2004-5.

J.B., ECE, independent research (Winter, 2005)

B.C., C.P., and K.S., “Sensing Floor Vibration for Fall Detection,” 2005.

E.S., “Building Three-Dimensional SIFT Keypoint Clouds for Object Recognition,” Honors project, Winter 2006.

E.K., J.B., P.R., B.W. , “Interactive Robot to Aid in Treatment and Diagnosis of Autism,” capstone team, Fall 2005- Winter 2006.

M.V., G.H., N.B., H-P L., “Robots for the Autistic,” capstone project, Winter-Fall, 2006.

N.H., A.H., C.E., S.B., summer interns for eldertech project, Summer, 2006.

B.W., Extended Autism Therapy Robot, honors project, Fall, 2006.

K.S., ECE undergraduate RA for working memory project, summer and fall, 2006.

M.B., CS undergraduate RA for working memory project, summer and fall, 2006

A.L., A.S., T.G., T.F., “Fall Detection Using Thermal Sensors,” capstone group, Fall 2006-Winter 2007

M.F., A.H., K.A., A.R., “Robotic Audio Localization,” capstone group, Winter-Fall 2007

C.E., N.H., J.S., undergraduate research summer interns for summer, 2007

J.S., Emerge undergraduate summer program, eldertech project, summer 2007.

C.E., ECE, UG research assistant, eldertech project, 2006-2007

J.S., CS, UG research assistant on sketch interface project, Fall, 2007

M.N., ECE, UG research assistant on eldertech project, Spring, 2008

D.L., M.N., J.L., summer interns, eldertech project, 2008

C.S., S.J., A.R. & C.S., capstone project, power-assist wheelchair, 2009

T.A., UG research: Electronic Health Record and web interface, Fall, 2009-Fall, 2011.

M.S., UG research: bed load cells for sleep restlessness, pulse and respiration, Spring, 2010

M.J., UG research, eldertech, Spring, 2010

B.S. and M.M., UG research: motion sensor design with Zigbee, Spring, 2010

E.C., UG research: web interface for eldertech sensor database and iPhone app, Spring, 2010-Spring, 2011

P.A., G.C., S.H., and D.W., Wii Controlled Mobile Robotic Arm, Capstone project, 2010

M.S., B.B., E.P., and M.A., SAE Formula Car Transmission Control Module, Capstone project, 2010

P.A., UG research: Zigbee motion sensor, Summer, 2010

J.H., J.M., M.S., B.Y., Building Automation for Mizzou Arena, Capstone project, Fall, 2010-Spring, 2011

O.I., UG research, ZigBee motion sensor , Summer-Fall, 2011.

A.S., UG research, Vision-based fall detection, Fall, 2011-Spring, 2013.

Z.L., Discovery Fellow, Radar fall detection and fall risk assessment project, Fall, 2011-Spring, 2012; UG research, Fall, 2012.

B.H., UG research, Fall detection using a PIR array, Spring, 2011-Spring, 2012.

X.D., UG research, Radar-based fall detection, Fall, 2011-Spring, 2012.

X.W., UG research, Fall, Radar-based fall detection, 2011-Spring, 2012.

L.G., C.B., Q.S., J.L., Hydraulic Infant Respiratory and Movement Monitor, Capstone project, Spring, 2012.

M.B. and D.B., REU summer students, Android-based speech processing for eldercare robotics (resulted in conference paper), Summer, 2012.

A.M., UG research, Kinect-based sports injury assessment for female athletes, Spring, 2012-Spring, 2014.

M.B., UG research, Kinect-based motion analysis on fractional dimension for fall risk assessment; Kinect-based sports injury assessment, Spring, 2013 - Summer, 2013.

D.P., UG research, Webcam-based gait analysis and fall detection in senior housing, Fall, 2013 – Fall, 2014.

J.C., UG research, Rewind and replay depth image video for hospital falls, Fall, 2013.

N.H., UG research, Automated Timed Up and Go (TUG) Using Kinect and Smartphone Sensing, Spring, 2014-Spring, 2015.

A.F., UG research, Smart App for creating a digital scrapbook with embedded stories, 2014.
B.H., UG help with Eldertech System Admin, 2014-2015
S.O., UG research on bed sensor, 2012-2015

CURRENT ADVISEES

Doctoral Students:

Robert Wallace, CS
Licet Rosales, ECE
Zhiyu Huo, ECE
Benjamin Hotrabhavananda, ECE
Moein Enayati, ECE

Masters Students:

Mark Schaumberg, ECE
Tatiana Alexenko, CS
Mary Sheahen, CS
Mengyuan Li, ECE
Anup Mishra, ECE

EXTERNAL GRANTS AWARDED (as PI)

17. Funding agency: National Science Foundation
Project title: US-Ignite: EAGER: GENI-Enabled In-Home, Personalized Health Monitoring and Coaching
Total amount: \$300,000
Total grant duration: 10-1-2013 to 9-30-2015
PI: M. Skubic
16. Funding agency: National Science Foundation
Project title: EAGER: An In-Home Health Alert System with Remote Care Coordination
Total amount: \$299,654
Total grant duration: 7-1-2012 to 6-30-2014
PI: M. Skubic
15. Funding agency: National Science Foundation
Project title: HCC: Human-Driven Spatial Language for Human-Robot Interaction
Total amount: \$499,512
Total grant duration: 9-1-2010 to 8-31-2014
PI: M. Skubic
14. Funding agency: National Science Foundation
Project title: CPS: Medium: Active Heterogeneous Sensing for Fall Detection and Fall Risk Assessment
Total amount: \$1,409,965
Total grant duration: 9-1-2009 to 8-31-2013
PI: M. Skubic
13. Funding agency: National Science Foundation
Project title: REU Supplement: HCC: Elder-Centered Recognition Technology for the Assessment of Physical Function

- Total amount: \$12,000
Total grant duration: 9-1-2008 to 8-31-2010
PI: M. Skubic
12. Funding agency: National Science Foundation
Project title: HCC: Elder-Centered Recognition Technology for the Assessment of Physical Function
Total amount: \$900,000
Total grant duration: 9-1-2007 to 8-31-2011
PI: Skubic
11. Funding agency: National Science Foundation
Project title: ITR: Technology Interventions for Elders with Mobility and Cognitive Impairments
Total amount: \$1,200,000
Total grant duration: 11-15-2004 to 10-31-2009
PI: Skubic
10. Funding agency: National Science Foundation
Project title: ITR: A Biologically Inspired Adaptive Working Memory System for Efficient Robot Control and Learning
Total amount: \$1.6M (\$485,991 for MU),
Total grant duration: 12-01-2003 to 11-30-2009
PI: M. Wilkes, Vanderbilt University
Your role (if not PI): PI for MU subcontract
9. Funding agency: Naval Research Lab
Project title: Sketch-Based Interfaces for a Robot Team with Integrated Speech Commands
Total amount: \$47,790
Total grant duration: 9-1-2006 to 8-31-2007
PI: Skubic
8. Funding agency: Naval Research Lab
Project title: Sketch-Based Interfaces for a Robot Team with Scene Matching
Total amount: \$46,551
Total grant duration: 09-1-2005 to 5-31-2006
PI: Skubic
7. Funding agency: Naval Research Lab
Project title: Sketch-Based Interfaces for a Robot Team
Total amount: \$46,489
Total grant duration: 09-1-2004 to 05-31-2005
PI: Skubic
6. Funding agency: Naval Research Lab
Project title: Using Spatial Reasoning in Robot Behaviors
Total amount: \$38,624
Total grant duration: 12-1-2003 to 8-31-2004
PI: Skubic

5. Funding agency: Naval Research Lab
Project title: Using Sketched Maps and Spatial References for Human-Robot Interaction
Total amount: \$34,509
Total grant duration: 12-30-2002 to 9-30-2003
PI: Skubic
4. Funding agency: Naval Research Lab
Project title: Using Spatial Analysis for Tactical Navigation of Semi-Autonomous Ground Vehicles
Total amount: \$34,030
Total grant duration: 9-1-2001 to 5-31-2002
PI: Skubic
3. Funding agency: National Science Foundation
Project title: Event-Driven Computing Projects for Software Engineering Education
Total amount: \$74,997
Total grant duration: 9-1-2000 to 8-31-2002
PI: Skubic
2. Funding agency: IEEE Robotics and Automation Society
Project title: RAS Education Web Site Development
Total amount: \$1200
Total grant duration: 1-1-2001 to 12-31-2001
PI: Skubic
1. Funding agency: IEEE Robotics and Automation Society
Project title: RAS Education Web Site Development
Total amount: \$1200
Total grant duration: 1-1-2000 to 12-31-2000
PI: Skubic

EXTERNAL GRANTS AWARDED (as co-PI)

20. Funding agency: AHRQ
Project title: Self-Management via Health Kiosk by Community-Residing Older Adults
Total amount: \$102,677 for MU (total is \$2,498,737)
Total grant duration: 12-1-2014 to 11-30-2015
PI: J. Matthews, University of Pittsburgh
Your role (if not PI): PI for MU subcontract
19. Funding agency: National Science Foundation
Project title: MRI: Acquisition of Instrument for Data-Intensive applications with Hybrid Cloud Computing Needs
Total amount: \$600,000
Total grant duration: 9-1-2014 to 8-31-2017
PI: C.-R. Shyu
18. Funding agency: National Science Foundation
Project title: REU Site: Research in Consumer Networking Technologies

- Total amount: \$359,993
Total grant duration: 2-1-2014 to 1-31-2017
PI: Y. Shang
Your role (if not PI): Investigator
17. Funding agency: National Institutes of Health
Project title: Intelligent Sensor System for Early Illness Alerts in Senior Housing
Total amount: \$1,768,179
Total grant duration: 5-16-2013 to 5-15-2016
PI: M. Rantz
Your role (if not PI): co-PI
16. Funding agency: National Science Foundation
Project title: CC-NIE Integration: Creation of an Institutional Cyberinfrastructure to Enable Researcher-Oriented, Federated Environment for Large, Collaborative Science Projects
Total amount: \$986,776
Total grant duration: 1/1/2013 to 12/31/2014
PI: G. Springer
Your role (if not PI): Investigator
15. Funding agency: National Science Foundation
Project title: SHB: Small: Computational Algorithms for Predictive Health Assessment
Total amount: \$150,000
Total grant duration: 9-1-2011 to 8-31-2014
PI: M. Popescu
Your role (if not PI): co-PI
14. Funding agency: National Science Foundation
Project title: REU SITE: Research in Home and Consumer Networking Technologies
Total amount: \$340,000
Total grant duration: 3-1-2010 to 2-28-2013
PI: W. Zeng
Your role (if not PI): senior personnel
13. Funding agency: Leonard Wood Institute
Project title: Vision based Vehicle Occupants Counting System with Online Learnability
Total amount: \$491,852
Total grant duration: 9-1-2010 to 8-31-2011
PI: Xu (Tony) Han
Your role (if not PI): co-PI
12. Funding agency: AHRQ (Agency for Healthcare Research and Quality)
Project title: Technology to Automatically Detect Falls and Assess Fall Risk in Senior Housing
Total amount: \$1,989,436
Total grant duration: 9-1-2009 to 8-31-2013
PI: M. Rantz
Your role (if not PI): co-PI

11. Funding agency: National Institutes of Health
 Project title: Technology to Automatically Detect Early Signs of Illness or Functional Decline in Older Adults with Chronic Disease in Senior Housing
 Total amount: \$404,591
 Total grant duration: 8-13-2009 to 8-12-2012
 PI: M. Rantz
 Your role (if not PI): co-PI

10. Funding agency: Leonard Wood Institute
 Project title: Suspicious Activity Detection for Perimeter Safety and Force Protection
 Total amount: \$498,759
 Total grant duration: 9-1-2009 to 8-31-2010
 PI: Z. He
 Your role (if not PI): co-PI

9. Funding agency: National Geospatial Intelligence Agency
 Project title: Linguistic Spatial Reasoning
 Total amount: \$682,407
 Total grant duration: 8-5-2008 to 8-4-2012
 PI: J. Keller
 Your role (if not PI): co-PI

8. Funding agency: Rand / Hartford Foundation
 Project title: Building Interdisciplinary Geriatric Health Care Research Centers Initiative
 Total amount: \$200,000
 Total grant duration: 1-1-2007 to 12-31-2008
 PI: M. Rantz
 Your role (if not PI): Supervision and mentoring for an exercise safety project

7. Funding agency: National Science Foundation
 Project title: Mizzou ADVANCE Partnerships for Adaptation, Implementation and Dissemination: Promoting Institutional Change at the University of Missouri
 Total amount: \$499,993
 Total grant duration: 1-1-2007 to 12-31-2010
 PI: J. Litt
 Your role (if not PI): Steering Board; Representative for College of Engineering

6. Funding agency: U.S. Administration on Aging
 Project title: Technology to Enhance Aging in Place at Tiger Place
 Total amount: \$979,104
 Total grant duration: 09-29-2005 to 12-31-2009
 PI: M. Rantz
 Your role (if not PI): Lead investigator from Engineering

5. Funding agency: National Science Foundation
 Project title: GK-12: Engineering Fellows in G6-9 Science Education
 Total amount: \$1,560,439
 Total grant duration: 4-15-2005 to 12-31-2009
 PI: S. Nair

- Your role (if not PI): Supervision of two graduate fellows per year
4. Funding agency: National Science Foundation
 Project title: Acquisition of a 3D Motion Analysis System
 Total amount: \$127,329
 Total grant duration: 8-1-2003 to 7-31-2007
 PI: F. Pai
 Your role (if not PI): Project supervision using motion capture equipment
 3. Funding agency: U.S. Army Night Vision Lab
 Project title: Nonlinear Signal Processing of Ground Penetrating SAR Sensor Data for Land Mine Detection
 Total amount: \$143,218
 Total grant duration: 10-1-2002 to 9-30-2003
 PI: J. Keller
 Your role (if not PI): Supervision of robot development for trip wire detection
 2. Funding agency: U.S. Army Night Vision Lab
 Project title: Nonlinear Signal Processing of Ground Penetrating SAR Sensor Data for Land Mine Detection
 Total amount: \$200,000
 Total grant duration: 2-14-2002 to 8-14-2002
 PI: J. Keller
 Your role (if not PI): Supervision of robot development for trip wire detection
 1. Funding agency: Morris Animal Foundation
 Project title: Quantification of Spinal Ataxia in Horses Using Kinematic Analysis of Gait
 Total amount: \$22,819
 Total grant duration: 9-1-2001 to 8-31-2003
 PI: K. Keegan
 Your role (if not PI): Algorithm development for equine gait analysis

INTERNAL GRANTS

6. Funding agency: Mizzou Advantage Media of the Future
 Project title: Measuring the Alignment of Piano Students for Injury Prevention
 Total grant duration: 2013 to 2014
 PI: P. Savvidou
 Your role (if not PI): co-PI
5. Funding agency: Mizzou Advantage Media of the Future
 Project title: Portable Inexpensive Motion Analysis System to Identify Female Athletes at High Risk of Knee ACL Tear
 Total grant duration: 2014 to 2015
 PI: A. Gray
 Your role (if not PI): co-PI
4. Funding agency: PRIME
 Project title: CPS: Medium: Active Heterogeneous Sensing for Fall Detection and Fall Risk Assessment

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|------------------------|-----------------------|
| Total amount: | \$181,221 |
| Total grant duration: | 9-1-2009 to 8-31-2013 |
| PI: | M. Skubic |
| Your role (if not PI): | PI |
-
3. Funding agency: Research Council
 Project title: Faculty International Travel Grant
 Total amount: \$1500
 Total grant duration: 2001
 PI: Skubic

 2. Funding agency: Big 12 Faculty Fellowship Program
 Project title: Collaborative Work with Texas A&M University
 Total amount: \$2500
 Total grant duration: 1998
 PI: Skubic

 1. Funding agency: University of Missouri Research Board
 Project title: Acquiring Mobile Robot Skills Using Human Demonstration
 Total amount: \$47,000
 Total grant duration: 1-1-1997 to 12-31-1998
 PI: Skubic

PATENT APPLICATIONS

1. Anonymized Video Analysis Methods and Systems. US 2010/0328436
2. Integrated Sensor Network Methods and Systems. US 2010/0302043
3. Hydraulic Bed Sensor and System for Non-Invasive Monitoring of Physiological Data. PCT/US12/53325
4. Method for Activity Analysis, Fall Detection and Risk Assessment in Eldercare. Provisional patent application. US 2013/0289449 A1
5. Health Alert System Using Environmental (Non-Wearable) Sensors. Provisional patent application. 12UMC065prov

PUBLICATIONS (student names are underlined)

Manuscripts in review

- M1. M. Rantz, M. Skubic, C. Abbott, C. Galambos, M. Popescu, J. Keller, E. Stone, J. Back, S.J. Miller, and G.F. Petroski, "An automated in-home fall risk assessment and detection sensor system for older adults," *The Gerontologist*, in review.
- M2. M. Skubic, R.D. Guevara, and M. Rantz, "Automated Health Alerts Using In-Home Sensor Data for Embedded Health Assessment," *IEEE Journal of Translational Engineering in Health and Medicine*, in review.
- M3. P. Calyam, A. Mishra, R. B. Antequera, D. Chemodanov, A. Berryman, K. Zhu, C. Abbott, and M. Skubic, "Synchronous Big Data Analytics for Personalized and Remote Physical Therapy," *Pervasive and Mobile Computing*, in review.
- M4. K. Lane, M. Rantz, M. Skubic, C. Galambos, and C.M. Palmer, "Can Embedded Technology Assist Us in Detecting Early Signs of Illness in Persons with Intellectual and/or Developmental Disabilities?" *Technology and Disability*, in review.

Journal publications

- J1. Bo-Yu Su, K. C. Ho, M. Rantz, and M. Skubic, "Doppler Radar Fall Activity Detection Using the Wavelet Transform," *IEEE Transactions on Biomedical Engineering*, accepted
- J2. E.E. Stone, M. Skubic, M. Rantz, C. Abbott, and S. Miller, "Average In-Home Gait Speed: Investigation of a New Metric for Mobility and Fall Risk Assessment of Elders" in press, *Gait and Posture*
- J3. F. Wang, M. Skubic, M. Rantz, T. Yardibi, and P. Cuddihy, "Quantitative Gait Measurement with Pulse-Doppler Radar for Passive In-Home Gait Assessment," *IEEE Transactions on Biomedical Engineering*, 2014, 61(9): 2434-2443.
- J4. M.J. Rantz, M. Skubic, M. Popescu, C. Galambos, R.J. Koopman, G.L. Alexander, L. Phillips, K. Musterman, J. Back, and S.J. Miller, "A New Paradigm of Technology-Enabled "Vital Signs" for Early Detection of Health Change," *Gerontology*, in press.
- J5. E.E. Stone and M. Skubic, "Fall Detection in Homes of Older Adults Using the Microsoft Kinect," in press, *IEEE Journal of Biomedical and Health Informatics*.
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- A33. M. Skubic, G. Kondraske, G. Khoury, P. Fiedler, B. Morgan and S. Graves, "Performance Measurement and Prediction in a Distributed Telerobotics System", In *Proc. of the 1995 IEEE International Conference. on Systems, Man, and Cybernetics*, vol. 3, pp. 2121-2126, Vancouver, BC, Oct., 1995.

Other Presentations at Conferences

- P1. C. Galambos, M. Skubic, M.J. Rantz, S. Miller, G.L. Alexander, J.M. Keller and M. Popescu, "TigerPlace: Supporting Aging in Place with Technology," 2014 Annual Scientific Meeting, The Gerontological Society of America, Nov., 2014, Washington, DC.

- P2. E. Stone and M. Skubic, "Capturing In-Home Gait Parameters Using Vision Based Sensing," poster presentation of the 2012 International Conference of the International Society for Gerontechnology, Eindhoven, Netherlands, June, 2012.
- P3. C. Galambos, M. Skubic, M. Rantz, and S. Wang, "Using Density Map Visualization for Early Detection and Management of Dementia and Depression, oral presentation of the 2012 International Conference of the International Society for Gerontechnology, Eindhoven, Netherlands, June, 2012.
- P4. L. Carlson, M. Skubic, J. Miller, Z. Huo, and X.O. Li, "A Corpus of Spatial Descriptions for the Development of Human-Driven Spatial Language Algorithms," poster presentation at the Psychonomics Conference, Nov., 2011, Seattle, WA.
- P5. M. Skubic, S. Blisard, R.H. Luke, E. Stone, D. Anderson, and J.M. Keller, "Generating 3D Spatial Descriptions from Stereo Vision Using SIFT Keypoint Clouds," poster presentation at the Annual Meeting of the Cognitive Science Society, Boston, July, 2011.
- P6. D. Heise, L. Rosales, and M. Skubic, "Hydraulic Bed Sensor for Monitoring Heartbeat and Respiration," AAAI Spring 2011 Symposium, Computational Physiology, Stanford University, March, 2011.
- P7. F. Wang and M. Skubic, "Body Sway Measurement During Standing and Walking for Fall Risk Assessment Using Inexpensive Webcam," 2010 International Conference of the International Society for Gerontechnology, Vancouver, BC, May, 2010.
- P8. E. Stone, D. Anderson, M. Skubic, J. Keller. "Footfall extraction and visualization from voxel data," 2010 International Conference of the International Society for Gerontechnology, Vancouver, BC, May, 2010.
- P9. G. Alexander, C. Galambos, M. Skubic, S. Wang, "Density Map Visualization as a tool to monitor activity levels of older adults," 2010 International Conference of the International Society for Gerontechnology, Vancouver, BC, May, 2010.
- P10. G. Demiris, D. Parker Oliver, M. Skubic, M.J. Rantz, "Older Adults' Privacy Considerations for Vision Based Recognition Methods," 2009 Annual Scientific Meeting, The Gerontological Society of America, Nov., 2009, Atlanta, GA.
- P11. M. Skubic, D. Anderson, J.K. Keller, M.J. Rantz, M. Aud, "Vision-Based Fall Recognition for Elders," 2009 Annual Scientific Meeting, The Gerontological Society of America, Nov., 2009, Atlanta, GA.
- P12. F. Wang, M. Skubic, E. Stone, J. Krampe, W. Dai, T. Banerjee, "Automatic Gait Analysis Using Vision-Based Monitoring," 2009 Annual Scientific Meeting, The Gerontological Society of America, Nov., 2009, Atlanta, GA.
- P13. M.J. Rantz, M. Skubic, G. Alexander, M. Aud, B. Wakefield, S. Miller, J. Krampe, "Using Integrated Sensor Networks for Early Illness Detection," 2009 Annual Scientific Meeting, The Gerontological Society of America, Nov., 2009, Atlanta, GA.
- P14. S. Wang, C. Galambos, M. Aud, M. Skubic, "Monitoring Activity Level with Density Map Visualization," 2009 Annual Scientific Meeting, The Gerontological Society of America, Nov., 2009, Atlanta, GA.

Local Presentations and Posters

- L1. Beamer, L., Burgoyne, S., Chandrasekhar, M., Deakyne, C., Felts, K. S., Hart, J., Hermsen, J. M., Litt, J., Lorenzen, C., Middleton, M., Skubic, M., & Tucker, S. (April 2009). *Mizzou ADVANCE: A gender equity initiative at the University of Missouri*. Poster presented at the annual University of Missouri Life Sciences Week Poster Session, Columbia, Missouri.
- L2. J. Litt, L. Beamer, S. Burgoyne, M. Chandrasekhar, C. Deakyne, J. Hart, J. Hermsen, C. Lorenzen, M. Middleton, M. Skubic, S. Tucker, "Mentoring Senior Faculty: Highlights of the Mizzou ADVANCE Mentoring Program," presented at the 7th Annual ADVANCE Principal Investigators Meeting, Alexandria, Virginia, May12-13, 2008.

- L3. J. Litt, L. Beamer, S. Burgoyne, M. Chandrasekhar, C. Deakyne, J. Hart, J. Hermsen, C. Lorenzen, M. Middleton, M. Skubic, S. Tucker, "Mizzou ADVANCE: A gender equity initiative in science, technology, engineering and mathematics at the University of Missouri," Life Sciences Week Poster Session, University of Missouri, Columbia, MO, April 16, 2008.

Technical Reports

- T1. R.H. Luke, D.T. Anderson, J.M. Keller, and M. Skubic, "Human segmentation from video in indoor environments using fused color and texture features," Technical Report, Dept. of ECE, University of Missouri, Columbia, MO, 2008.
- T2. M. Skubic, C. Bailey, S. Blisard, G. Chronis, C. Huggard, R. Luke, G. Scott, M. Williams, "Guinness Phase I," Technical Report, Dept. of CECS, University of Missouri, Columbia, MO, June 20, 2003.
- T3. S. Arafat, M. Skubic, K. Keegan, and D. Wilson, "Wavelet Selection Methods for Kinematic Gait Analysis," Technical Report, Dept. of CECS, University of Missouri, Columbia, MO, 2003.
- T4. D. Haun, K. Hummel and M. Skubic, "Morphological Neural Network Vision Processing for Mobile Robots", Technical Report, Dept. of CECS, University of Missouri, Columbia, MO, 2000.
- T5. M. Skubic and B. Forrester, "Competitive Agglomeration Clustering of Qualitative Contact States for an Automotive Transmission Assembly", Technical Report TR-98-005, Department of Computer Engineering and Computer Science, University of Missouri, Columbia, MO, 1998.
- T6. M. Skubic and S. Graves, "Force Sensor Characterization", Technical Report 96-010, Department of Computer Science, Texas A&M University, April, 1996.
- T7. P. Schilling, M. Skubic and G. Kondraske, "Shared Human Autonomous Control: TATP1 Demo 5 Report", Technical Report 94-003R, Human Performance Institute, University of Texas at Arlington, 1994.
- T8. S. Graves, M. Skubic and J. Mollenhauer, "The FuzzBug Mobile Robot", Technical Report 93-041, Department of Computer Science, Texas A&M University, May, 1993.
- T9. M. Skubic, "Using TelRIP with Ada: A Prototype Implementation", Technical Report 93-031, Department of Computer Science, Texas A&M University, May, 1993.

Invited Talks

1. "New Vital Signs and New Paradigms for Eldercare and Rehabilitation," University of Florida, Gainesville, FL, January, 2015.
2. "New Technologies to Support Aging in Place," University of Florida, Gainesville, FL, January, 2015.
3. "Successful University-Industry Partnerships," I-70 Corridor Network on Aging Research event, St. Louis, MO, Sept. 24, 2014
4. "Successful University-Industry Partnerships," I-70 Corridor Network on Aging Research event, Mid-America Regional Council, Kansas City, MO, Sept. 3, 2014
5. "Proactive Health Management Using In-Home Sensing and Recognition Technology," Design of Medical Devices Conference, Technology Needs for Geriatric Care session, April 9, 2014
6. "A New Paradigm of New, More Sensitive Vital Signs: Automated Fall Detection and Fall Risk Assessment with Non-Wearable Sensors for In-home and Hospital Application," Interdisciplinary Center on Aging, University of Missouri, April 1, 2014 (joint with Marilyn Rantz)
7. "Proactive Health Management Using In-Home Sensing and Recognition Technology," Computer Science Dept., Missouri University of Science and Technology, February 25, 2014
8. "Improving Healthcare and Quality of Life for Seniors," Florida Philanthropic Network Summit, Orlando, FL, January, 2014
9. "Proactive Health Management Using In-Home Sensing and Recognition Technology," Society of Women Engineers, Columbia, MO, November, 2013.
10. "Proactive Health Management Using In-Home Sensing and Recognition Technology," ECE Seminar, University of Missouri, Columbia, October, 2013.

11. "Technology for Health: Current Work and Future Possibilities," Texas A&M University, College Station, TX, July, 2013.
12. "Technology for Early Health Change Detection," US Ignite Application Summit, Chicago, IL, June, 2013. *Awarded best US Ignite Health Application.*
13. "Proactive Health Management Using In-Home Sensing and Recognition Technology, Texas A&M University, College Station, TX, April, 2013.
14. "The Future is NOW – Technology for Health Alerts for Early Detection of Changes in Health Conditions, Western Home Communities, Cedar Falls, IA (with Dr. Marilyn Rantz), April, 2013.
15. "Proactive Health Management Using In-Home Sensing and Recognition Technology, Carnegie Mellon University, Pittsburgh, PA, March, 2013.
16. "Proactive Health Management Using In-Home Sensing and Recognition Technology, University of Kansas, Lawrence, KS, October, 2012.
17. "Proactive Health Management Using In-Home Sensing and Recognition Technology, Microsoft Research, Bellevue, WA, October, 2012.
18. "Proactive Health Management Using In-Home Sensing," Brookings, SD, July, 2012.
19. "Proactive Health Management to Support Aging in Place," Amsterdam, Netherlands, June, 2012.
20. "Non-Wearable Sensing for In-Home Gait Analysis," Invited session, National Physical Therapy Conference, Chicago, IL, Feb., 2012.
21. "Proactive Health Management to Support Aging in Place," Georgia Tech University, Atlanta, GA, November, 2011
22. "Proactive Health Management to Support Aging in Place," US Ignite Workshop, Case Western University, Cleveland, OH, June 9, 2011.
23. "Research for Aging in Place," Appreciation Luncheon for TigerPlace Residents, Columbia, MO, May 18, 2011.
24. "Proactive Health Management through Integration of Sensor Data and Health Data," US Ignite Workshop, Washington, D.C., May 16, 2011.
25. "Recognition Technology to Support Aging in Place," Washington State University, Pullman, WA, March 24, 2011.
26. "Recognition Technology to Support Aging in Place," Oregon Health Science University, Portland, OR, Oct. 29, 2010.
27. "Continuous Monitoring in the Home," NIH Workshop, Bethesda, MD, June 16, 2010.
28. "Recognition Technology for Aging in Place," Bio-Engineering, University of Missouri, April, 2010.
29. "Recognition Technology to Support Aging in Place," Volz Festschrift, Texas A&M University, College Station, TX, April 10, 2010.
30. "How Home Sensors Can Help Keep People Independent," Forum on Technology and Design for Healthy Aging, University of Washington, Seattle, WA, May, 2009.
31. "Recognition Technology for Aging in Place," Carnegie Mellon University, Pittsburgh, PA, March 27, 2009.
32. "Assessing Eldercare Technology in the Real World," AAAI Spring Symposium, Stanford University, Palo Alto, CA, March 25, 2009.
33. "New Technologies to Keep Elders Independent," Saturday Morning Science series, University of Missouri, Columbia, MO, Feb., 2009.
34. "Recognition Technology for Aging in Place," Bio-Rob Conference, Oct., 2008.
35. "New Technologies to Enhance Aging," 18th Annual Caring for the Frail Elderly Conference, Columbia, MO, Aug. 15, 2008.
36. "Technology to Enhance Aging in Place," University of Washington, Seattle, WA, July 23, 2008.
37. "Recognition Technology for Aging in Place," Hogeschool van Amsterdam, Almere, Netherlands, March 17, 2008.
38. "Technology and Aging: The University of Missouri Eldertech Initiative," ICOA Aging Seminar, Jan, 2008

39. "Technology and Aging: The University of Missouri Eldertech Initiative," Mizzou Alumni Association, January 14, 2008
40. "Recognition Technology for Functional Assessment of Older Adults," University of Missouri-Rolla, Nov. 26, 2007
41. "Recognition Technology for Functional Assessment of Older Adults," Brooklyn College, May 3, 2007
42. "Recognition Technology for Functional Assessment of Older Adults," Utah State University, Feb. 8, 2007.
43. "Technology for Successful Aging," MU Libraries Faculty Lecture Series, University of Missouri, Columbia, Dec. 5, 2006.
44. "Monitoring Older Adults with Mobility and Cognitive Impairments," National Science Foundation, Sept. 18, 2006.
45. "Environmental Awareness of People," ROSE 2006 Workshop, Orebro, Sweden, May, 2006.
46. "Assessing Mobility and Cognitive Problems in Elders," ICOA Seminar, University of Missouri, Columbia, April 20, 2006.
47. "Using Robots in Autism Therapy: A Survey of Ongoing Research," HMI Seminar, University of Missouri, Columbia, Oct. 18, 2005.
48. "A Biologically Inspired Working Memory for Robots," University of Notre Dame, Jan. 15, 2005.
49. "A Biologically Inspired Working Memory for Robots," Cognition and Neuroscience seminar, Psychology Dept., University of Missouri, Columbia, Nov. 12, 2004
50. "Projects in Human-Robot Interaction," ACM Chapter, Truman State University, March 29, 2004.
51. "Projects in Human-Robot Interaction," ACM Chapter, UM-C, March 2, 2004.
52. "Spatial Reasoning for Robots", NASA Johnson Space Center, March 12, 2003.
53. "High Resolution Simulation Environments for Training," Ft. Leonard Wood, Jan. 23, 2003.
54. "Spatial Modeling and Reasoning for Robots", Vanderbilt University, Oct. 24, 2002.
55. "Spatial Modeling and Reasoning for Robots", Ft. Leonard Wood, Sept. 12, 2002.
56. "Botball", Building for Tomorrow Robotics Workshop, St. Louis, MO, June 10, 2002.
57. "The Robot Ramble Competition for the Science Olympiad 2000", workshop for Missouri teachers, Columbia, MO, Sept. 29, 2000.
58. "Training Intelligent Robotic Assistants", DARPA Workshop on Exoskeletons for Human Performance Augmentation, Washington, DC, March 2, 2000.
59. "Making Robots Easier to Use in the Real World", Truman State University, March 29, 1999.
60. "Acquiring Robust Robot Skills from Human Demonstration", Texas A&M University, Feb. 18, 1999.
61. "Acquiring Robust Robot Skills from Human Demonstration", University of Minnesota, Nov. 17, 1998.
62. "How Teaching Writing Intensive Courses Affects Faculty Writing and Research", University of Missouri, Columbia, Nov. 13, 1998.
63. "Making Robots Easier to Use in the Real World", University of Missouri, Columbia, Nov. 4, 1998.
64. "Acquiring Robust Robot Skills from Human Demonstration", Colorado School of Mines, March 6, 1998.
65. "Learning Force Sensory Patterns and Skills from Human Demonstration", Texas A&M University, Nov., 1996.
66. "Direct Manipulation in Virtual Environments", Texas A&M University, April, 1995.
67. "Human-Robot Interaction: Principles and Applications", Texas A&M University, March, 1995.

International Robot Competitions

1. AAAI 2005 Robotic Competition: Exhibition, July, 2005, Pittsburgh, PA, *awarded the technical innovation award for the sketch interface*
2. AAAI 2004 Robotic Competition: Exhibition and Open Interaction events, July, 2004, San Jose, CA, *awarded the technical innovation award for robot interface design*

SERVICE HIGHLIGHTS

NATIONAL / INTERNATIONAL

Co-lead, I-70 Corridor Network on Aging, 2013-present.

Co-Lead, SmartAmerica Challenge team: Closed Loop Healthcare, 2013-2014.

Scientific Advisory Board, Quality of Life Technology Center, Carnegie Mellon Univ. and Univ. of Pittsburgh, 2010-2014.

Co-organizer, AAAI Symposium, AI for Gerontechnology, Fall, 2012.

Co-editor, Special issue on Pervasive Healthcare, *Journal of Pervasive and Mobile Computing*, 2012.

Co-organizer, SmartE Workshop, IEEE International Pervasive Computing Conference, March 2011

Advisory Board for new journal: *Journal of Human-Robot Interaction*, 2010-2011.

Invited participant for NIH Workshop, June, 2010

Invited participant for AARP Workshop, 2010

Invited participant for Intel Workshop, Dec., 2010

Chair, Association for the Advancement of Artificial Intelligence (AAAI) Spring and Fall Symposium Series, Washington, DC (fall) and Stanford University (spring), Fall, 2008 to 2011

Chair, organizing committee for Symposium on AI in Eldercare: New Solutions to Old Problems, to be held at the AAAI Fall 2008 Symposium series, Washington, DC, Nov. 7-9, 2008

Co-Chair, AAAI Spring and Fall Symposium Series, Washington, DC (fall) and Stanford University (spring), fall, 2006 to fall, 2008

Organizer for CogRIC Workshop (International Workshop on Cognitive Robots, Intelligence and Control), Windsor, U.K., Aug., 2006. *We secured funding from the National Science Foundation for an invitation-only workshop, inviting the top researchers in the world.*

Registration Co-Chair, 2007 Human-Robot Interaction Conference, Washington, DC.

Registration Chair, 2006 Human-Robot Interaction Conference, Salt Lake City, UT.

Program Co-Chair, 2005 IEEE Workshop on Robot-Human Communication (RO-MAN 2005), Nashville, TN.

Reviewer for the National Science Foundation (ongoing)

Guest Editor, *IEEE Transactions on SMC-Part A*, special issue on Human-Robot Interaction, 2005.

External Reviewer for Promotion and Tenure (ongoing)

Co-Chair, Education Committee, IEEE Robotics and Automation Society, 2000-2003

Membership Activities Board, IEEE Robotics and Automation Society, 2002-2004

Technical Program Committee for the International Conference on Human-Robot Interaction, 2008.

Technical Program Committee for the AAAI Conference, 2007.

Technical Program Committee for the Fourth International Conference on Intelligent Technologies, 2003.

Technical Program Committee for the 2003 IEEE International Conference on Robotics and Automation

Technical Program Committee for the 2002 IEEE/RSJ International Conference on Intelligent Robots and Systems

Technical Program Committee for the 2001 and 2002 IEEE International Conference on Fuzzy Systems

Technical Committee on Fuzzy Systems (IEEE Neural Network Council), 1999-2000

Associate Editor for the *IEEE Transactions on Fuzzy Systems*

Reviewer for the *IEEE Transactions on Robotics and Automation*

Reviewer for the *IEEE Transactions on Systems, Man, and Cybernetics*

Reviewer for the *IEEE Transactions on Biomedical Engineering*

Reviewer for the *IEEE Journal of Biomedical and Health Informatics*

Reviewer for the *Journal of Ambient Intelligence and Smart Environments*

Reviewer for the *IEEE Robotics and Automation Magazine*

Reviewer for the *IEEE Transactions on Knowledge and Data Engineering*

Review for the *ACM Transactions on Accessible Computing*

Review for the *International Journal of Social Robotics*

Reviewer for the *Journal of Pervasive and Mobile Computing*
Reviewer for the *Open Access Sensors Journal*
Reviewer for the International Conference of the IEEE Engineering in Medicine and Biology Society
Reviewer for the International Conference on Human-Robot Interaction
Reviewer for the IEEE International Conference on Robotics and Automation
Reviewer for the IEEE/RSJ International Conference on Intelligent Robots and Systems
Session Organizer for the IEEE International Conference on Robotics and Automation
Session chair, IEEE International Conference on Robotics and Automation
Session chair, IEEE International Conference on Neural Networks
Session chair, IEEE International Conference on Fuzzy Systems
Session chair, International Conference of the IEEE Engineering in Medicine and Biology Society

UNIVERSITY OF MISSOURI

Aging in Place Board, 2010-present
Organizing Committee, Saturday Morning Science, 2011
Steering Board, Mizzou ADVANCE Project, 2007-2010. *The board was presented with a "Tribute to MU Women" award, March, 2008.*
Mizzou ADVANCE Council, 2007-2010
MU Information Technology Committee, 2001-2004.
Reviewer for University of Missouri Research Board

UNIVERSITY OF MISSOURI, College of Engineering

Director, Center for Eldercare and Rehabilitation Technology (2006-present)
MU College of Engineering Search committee for grant writer (2004-2005)
MU College of Engineering Research Council (2004-present)
MU College of Engineering Policy Committee (2005-2007)
Affirmative Action Committee, College of Engineering, 1997-2004

UNIVERSITY OF MISSOURI, ECE Department

Strategic Planning Committee (2014-present)
Chair, Intelligent Systems Group, ECE Department (Spring, 2010 – present)
Faculty Search Committee for ECE Chair (2011-2012)
Chair, P&T Committee, ECE Department (2011)
Faculty Search Committee, ECE Department (Fall, 2009 – Spring, 2010)
Course and Curriculum Committee, ECE Department (Fall, 2008 – Spring, 2010)
Graduate Student Committee, ECE Department (Fall, 2008 – Spring, 2009)
Chair, Student Recruiting Committee, ECE Department (Fall, 2007 – Spring, 2008)
Chair, Faculty Search Committee, ECE Department (Fall, 2006 – Winter, 2007)
Graduate Review Committee, ECE Department (Fall, 2006)
Chair, Hiring Committee, ECE Department (Winter, 2006)
Chair, Graduate Committee, ECE Department (2003-2004)
Faculty Search Committee, ECE Department (2003-2004)

UNIVERSITY OF MISSOURI, CECS Department

Faculty Adviser, Student ACM Chapter, UMC, 1999-2002 (co-adviser with J. Keller, April, 1999-2001).
Qualifying Committee, CECS Department, 2001-2002
Educational Lab Committee, CECS Department, 2001-2002
Space Committee, CECS Department, 2001-2002
Undergraduate Committee, CECS Department, 1997-2000
Faculty Search Committee, CECS Department, 1998-9

Curriculum Committee, CECS Department, 1998-2000
Advisor for Computer Engineering Undergraduates, 1998-2003

EDUCATIONAL OUTREACH

Advising, FIRST Lego team, May, 2012

Teleconference for FIRST Robotics Competition, Kansas City, MO, March, 2008.

Advisor for the Columbia Robotics Team, Botball, 2002. *The team won the National Tournament!*

State judge for the Science Olympiad Robot Ramble competition, April, 2001

Saturday Science program, Spring, 2000, 2001, 2004, 2006: Hands-On Session for Programming Robots – program for junior high students in the Columbia Public Schools, initially funded by the NSF. Exercises, lab equipment, and software were developed to offer pre-college students hands-on lab experience and to encourage interest in math and science. Approximately 90 junior high students participated in the program each year, in three sessions. More than half of the participants were young women. The curriculum introduced the junior high students to programming concepts by providing an easy and intuitive programming base and an intriguing platform to observe immediate feedback on the success of their programs. See also the web page: <http://www.cecs.missouri.edu/~skubic/kids/ss/>. The robots were redesigned and rebuilt in summer, 2004, and also used for a workshop targeting minority students (over 50 minority students attended).

STUDENT MENTORING

Mentoring Katy L., high school student in pre-Engineering class, Rockbridge High School, 2014-2015.

Job shadowing mentor for Brad W., Fatima High School, Westphalia, MO, 2014

Discovery Fellowship program mentor for Zachary L., ECE Dept, 2011-2012.

Mentor for Jairon S. (minority student from Jackson State University), Emerge summer fellow, 2007

Mentor for Sarah B. (Computer Engineering undergrad from Texas A&M University) through the CRA-W summer program, 2006

Discovery Fellowship Program mentor for Andy C. (MU Freshman) (academic year 2001-2002). *Andy earned his PhD at UC-Berkeley.*

McNair Scholars Program mentor for Lakesha B. and Maria J. (academic year 1998-1999)

Job shadowing mentor for Noah M., West Jr. High School, Columbia, MO, Oct., 1997

Job shadowing mentor for Abby D., West Jr. High School, Columbia, MO, Oct., 1998

Job shadowing mentor for Daniel L., West Jr. High School, Columbia, MO, Oct., 2002. *Daniel became a student at Stanford University and worked at MU as a summer intern in our lab in 2008.*

SERVICE EXHIBITS

MU College of Engineering Open House Exhibits, 1998, 1999, 2000, 2001, 2002, 2003 (*top CECS department exhibit*), 2004, 2005 (*ECE Dept. won second place*), 2006 (*won the top prize for the college*), 2007, 2008 (*ECE Dept. won second place*), 2009, 2010 (*ECE Dept. won first place*), 2011, 2012.

MU College of Engineering, Demonstration for Missouri Scholars (high school students), July, 1999.

Project ENTER: Expanding Your Horizons, UM-C, March 13, 1999

MU College of Engineering High School Weekend, Feb. 5, 1999

Girl Scout Day, Sponsored by MU Society of Women Engineers, Jan. 23, 1999