MANIZHEH ZAND

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SUMMARY

My research focuses on Robotics, Machine Learning, Data Analysis, Multi-Sensory Systems, Human Factors, and User Interfaces. I develop inclusive assistive robots and autonomous systems to create safe human-robot collaboration environments. I collaborate across disciplines to design gender-inclusive AI, ensuring precise data collection and compliance with safety, privacy, and security standards. I also have strong communication, interpersonal, and management skills.

EDUCATION

Ph.D. in Electrical and Computer Engineering, Santa Clara University *2022 - 2025 (Expected)*
GPA: **3.74/4.00**
Thesis Topic: Personalized Assistive Robotic System that Detects Cognitive Fatigue in Real-Time in Human-Robot Collaboration while assisting individuals with Activities of their Daily Living (ADL)
Advisor: Dr. Maria Kyrarini

M.S. in Electrical Engineering, San Jose State University (SJSU) *2003*
GPA: **3.88/4.00**

B.S. in Electrical Engineering, San Jose State University *1994*
GPA: **3.81/4.00**

RESEARCH EXPERIENCE

Santa Clara University Santa Clara, CA
Research Assistant at Human-Machine Interaction & Innovation *Jan 2022 - Current*

- **Personalized Assistive Robotic System for Cognitive Fatigue Assessment**: Developing a multi-sensory system using ECG and EDA sensors to assess and respond to cognitive fatigue in individuals with paralysis, integrated with the hands-free robotic system. Project is funded by the National Science Foundation
- **Hands-Free Human-Robot Interaction**: Modeled a speech-responsive robotic system for aiding in meal prep and work preparation scenarios. Demo Robot in action and presentation in HRI-Late Breaking Report

TEACHING EXPERIENCE

Bremen University - PIP Summer School in Electrical Engineering and Physics (Graduate Level) Bremen, Germany
Guest Lecturer *Sept 2023*

- Designed and taught ethical data collection, analysis, and visualization using wearable sensors (IMUs) applying supervised machine learning methods, such as Support Vector Machines, Decision Trees, and Artificial Neural networks

Santa Clara University Santa Clara, CA
Teaching Assistance at Electrical and Computer Engineering Department *Jan 2022 -May 2023*

- **Lab Courses**: ECEN 337L: Introduction to Robot Operating System (ROS), Introduction to Logic Design, Real-Time Embedded System -ST32L476 platform, Machine learning models using SparkFun QuickLogic board

San Jose State University San Jose, CA
Adjunct faculty and Faculty Advisor at Electrical Engineering Departments and Aviation and Technology *Aug 1999 – May 2006, Aug 2014 – May 2021*

- Curated and taught multiple engineering courses, including IoT, Microprocessor Theory, and Signal Processing; nominated three times for Outstanding Lecturer Award by the Chair and Director of the Department
- Instructed advanced subjects like Microprocessor Based System Design and earned Cisco Big Data and Security IoT Instructor Certification

De Anza College Cupertino, CA
Instructor at Department of PSME (Physical, Science, Math, and Engineering) *Apr 2015 – Aug 2021*

- Increased department enrollment by 75% and enhanced student readiness through new labs, training instructors, organizing tech field trips, and hosting high-attendance events like the Atmel Truck, sponsored by notable tech companies, created YouTube channel to showcase students' projects
- Successfully proposed and facilitated conferences for MicroChip and Arduino and gained sponsorship for Maker Fairs.

School of Engineering, Northwestern Polytechnic University Fremont, CA
Adjunct Faculty at Electrical Engineering Department *Aug 2014 – May 2016*

- Taught graduate-level System-on-Chip course

MMS Adult Day Program, Morgan Hill, CA
Director and co-founder *Jan 2004 – Aug 2017*

- Collaborated with interdisciplinary teams, including physicians, behaviorists, and nurses, to design personalized programs for individuals with severe learning limitations. Developed individualized plans to enhance cognitive abilities and improve quality of life for program participants.

SCHOLARSHIPS, NOMINATIONS, AWARDS AND GRANTS

- The Best Student Paper award for my work on "Examining Diverse Gender Dynamics in Human-Robot Interaction (HRI): Trust, Privacy, and Safety Perceptions." PETRA 2024 ACM Conference
- 2024 EUFD Golden Ticket Recipient; Attended a workshop on integrating curriculum with entrepreneurial mindset, sponsored by the KEEN Engineering Unleashed Faculty Development provided
- iREDEFINE Professional Development Award by ECEDHA 2024
- NSF Doctoral Consortium Award from PETRA ACM Conference for 2022, 2023, and 2024
- Mini Grant -Clovis College Fall 2022 Women in Engineering Mentoring Project

- 'Giant Snowflake: Christmas in the Park' Grant by Community Investment Fund from San Jose Water Company in 2018
- Awarded exclusive President's Scholar in B.S. senior year at SJSU, the sole recipient from the entire engineering department

PROFESSIONAL ACTIVITIES AND OUTREACH

- Workshop co-chair Assistive and Intelligent Robotics in Household and Workplace Environments (AIR)The PErvasive Technologies Related to Assistive Environments (PETRA) 2025
- Reviewer IEEE VR 2025
- Reviewer and Session-Chair of PETRA 2024 and 2023 Workshop
- Reviewer for HRI 2023 and RO-MAN 2024 ,co-chair HUBEDA 2024 (Workshop on Human Behavior Data Acquisition for Human-Robot Interaction)
- Founder and President of Ph.D. Ingenium Club at Santa Clara University (*2022-2024*). Spearheaded a collaboration with Synopsys to establish a one-to-one Ph.D. student-to-Synopsys executives mentorship program
- Have assisted Summer Engineering Seminar at Santa Clara University (*2022-Current*). Guided high school juniors to explore the field of engineering
- Interviewed by Women in Tech interview for Electronics Weekly, Jan 27, 2021
- Founder and President of My Mentor Tree Non-Profit organization (*2017-2019*). Developed 'Sno-Pixel' electronics development kit, which was later adopted by 'Coral,' a Catholic Charities after-school program to train high-school students to light Christmas trees in downtown San Jose
- Engineering Club Advisor (*2015-2021*), De Anza College. Mentored 24 female students from Renaissance Academy Charter School, guiding them in developing community projects and presenting at seminars. Collaborated with SJSU Aerospace Engineering Department for mentoring programs at Campbell Middle Union School
- Discussion Leader, Mentoring Junior-level High School students at Enterprise Leadership Conference, Rotary Club of Los Gatos. (*2014-Current*).

SKILLS

Robotic Platforms:	Franka Emika Panda, Clearpath Ridgeback
Biosensors:	ECG, EDA, EMG
Human Subject Research Study:	Consent, IRB, Human Factor, Human Activity Recognition
Computational Intelligence:	Machine Learning (ML), Deep Learning (DL), Natural Language P (NLP),
Audio Filter Design:	Digital Signal Processing (DSP), FIR, IIR, LPF, HPF, BPF, Peak and
Programming Languages:	Python, C++, Matlab, Assembly, Verilog, Verifault
Electronic Design Software:	Multisim, LTSpice,
Tools and Frameworks:	ROS, PyTorch, Github
Processor Architectures:	CISC, RISC , SoC, FPGA

PUBLICATIONS (Google Scholar)

- M Kyrarini, K Kodur, **M Zand**, and H Tella, "Speech-based Communication for Human-Robot Collaboration: Evaluation Studies", Chapter from springer as part of the book: https://www.amazon.com/Discovering-Frontiers-Human-Robot-Interaction-Collaboration/dp/30316665
- **M Zand**, K Kodur, S Banerjee, N Banerjee, and M Kyrarini. 2024. Examining Diverse Gender Dynamics in Human-Robot Interaction: Trust Privacy and Safety Perceptions. In Proceedings of the 17th International Conference on PErvasive Technologies Related to Assistive Environments (PETRA '24). Association for Computing Machinery, New York, NY, USA, 74–79. https://doi.org/10.1145/3652037.3652078
- K. Kodur, **M. Zand**, M. Tognotti and M. Kyrarini, "Translucent Object Grasping Using Robot Vision," 2024 10th International Conference on Automation, Robotics and Applications (ICARA), Athens, Greece, 2024, pp. 107-111, doi: 10.1109/ICARA60736.2024.10552988
- K Kodur, **M Zand**, M Tognotti, and M Kyrarini Structured and Unstructured Speech2Action Frameworks for Human-Robot Collaboration: A User Study. TechRxiv. August 28, 2023. DOI: 10.36227/techrxiv.24022452.v1
- **M Zand**, J Ayoola, R Tuli, A Kalra, J Quach, and M Kyrarini. 2023. TalkConnect: A Mobile Networking App for People with Visual Impairments Attending In-person Formal Events. In Proceedings of the 16th International Conference on PErvasive Technologies Related to Assistive Environments (PETRA '23). Association for Computing Machinery, New York, NY, USA, 6–9. https://doi.org/10.1145/3594806.3594831
- M Kyrarini, **M Zand**, K Kodur. Assistive Robots for Persons with Visual Impairments: Current Research and Open Challenges. In Proceedings of the 16th International Conference on PErvasive Technologies Related to Assistive Environments
- K Kodur, **M Zand** and M Kyrarini. "Towards Robot Learning from Spoken Language" in 2023 Human-Robot Interaction Conference (HRI)
- **M Zand**, K Chaitanya Kodur, and M Kyrarini. "Automatic Generation of Robot Actions for Collaborative Tasks from Speech" in 2023 International Conference on Automation, Robotics and Applications (ICARA)
- **M Zand** and M. Kyrarini, 2022. Sensing Visual Art by Relatable Music and Haptic Feedback for Individuals with Visual Impairments. In Proceedings of the 15th International Conference on PErvasive Technologies Related to Assistive Environments, pp. 310-311. ACM
- D Parent, E Bellegarda, M Bhaskar, and **M Zand M** Faculty Experience with a Novel Remote Testing Protocol for Online Courses in 2022 IEEE Frontiers in Education Conference (FIE)

PUBLICATIONS UNDER PREPARATION

- **M Zand** and M. Kyrarini, 2024. AI-based Cognitive Fatigue Detection Using Wearable Sensors during Human-Robot Collaboration for Activities of Daily Living