Shahab Nikkhoo

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Interest

- **Robotics** Multi-Robot Systems, Modern Control, Localization and Mapping
- **Machine Learning** Deep Reinforcement Learning, Adversarial Machine learning
- **Cyber-Physical systems** Real-time Embedded Systems

Education

- **University of California, Riverside** — California, USA
  Ph.D., Electrical Engineering — *Sep 2022 - Present*
  Selected Courses: *Secure Autonomous System and CPS, Advanced OS, Theory of Computation*

- **University of Tehran** — Tehran, Iran
  B.S., Electrical Engineering (Control, Robotics); GPA: 15.02/20 — *Sep 2016 - Jul 2021*
  Selected Courses: *Advanced Robotics, Real-Time Embedded Systems, Mechatronics, Modern Control, Digital Control Systems, Industrial Control*

Publications

- **PIMbot: Policy and Incentive Manipulation for Multi-Robot Reinforcement Learning in Social Dilemmas** (Submitted to IROS'2023)
  Shahab Nikkhoo, Zexin Li, Aritra Samanta, Yufei Li, Cong Liu
- **MIMONet: Multi-Input Multi-Output On-Device Deep Learning** (Submitted to IROS'2023)
  Zexin Li, Xiaoxi He, Yufei Li, **Shahab Nikkhoo**, Wei Yang, Lothar Thiele, Cong Liu
- **An Intelligent Toy Car for Autism Screening using Multi-Modal Features** (Submitted to MDPI Sustainability)
  Bijan Mehralizadeh, Bahar Baradaran, **Shahab Nikkhoo**, Pegah Soleiman, Hadi Moradi

Summer School

- **Attendee,** Differential Privacy Summer School — Boston, USA
  Boston university — *2022*
- **Assistant,** Global Summer School — Barcelona, Spain
  Institute for advance architecture of Catalonia (Iaac) — *2019*

Teaching Experience

- **Advanced Robotics** — Tehran, Iran
  University of Tehran — *2021*
- **Mechatronics** — Tehran, Iran
  University of Tehran — *2021*
- **Real-Time Embedded Systems** — Tehran, Iran
  University of Tehran — *2020*

Work Experience

- **Persia 3D Printer:** 3D printer manufacturer — Tehran, Iran
  R&D Team Member (Part-time) — *2016 - 2021*
  - Embedded Designer
  - PCB Designer
  - C++ and Python Programmer
  - Research Fellow

Projects

- **WellOGraph**
  Digital Art - Robotic
  - An Omni directional drawing machine that raises awareness on water crisis
  - ROS base robot with Visual Odometry for positioning and a drawing system for plotting points on a canvas
- **Autonomous Quadcopter**
  Robotic
  - A ROS base autonomous Drone for doing automated task like auto takeoff - window detection
  - Designed the board, modified the control system for position holding, visualized the 2D map given by LIDAR
- **Mobile Robot Localization**
  Robotic
  - Developed a particle filter algorithm in python for localizing a mobile robot in gazebo
  - Creating the map with SLAM algorithm

- **Ball and Plate**
  Robotic
  - A 4 DOF parallel robot to control the position of a ball
  - Developed a code to position a ball and estimate the velocity with image processing algorithms
  - Designed a PD controller on an arduino base board
- **Raspberry Pi Base 3D Printer Controller**
  Python APP
  - Printer controller like octoprint but with more functions and option
  - Developed a python library for communicating with 3D printers trough serial port

Honors and Awards

- **Dean's Distinguished Fellowship,**
  University of California at Riverside, school of Electrical and Computer Engineering *2022*
- **Best undergraduate project,**
  University of Tehran, school of Electrical and Computer Engineering *2021*
- **1st Place RoboCup** UAV – Indoor (autonomous UAV)
  Iran Open International Robotic Competitions *2018*
- **2nd Place AUTCUP** Fira Drone (autonomous UAV)
  International Robotic Competitions *2018*

Skills

- **Languages** Python, C++, C#, Bash, Embedded C
- **Frameworks** PyTorch, TensorFlow
- **Platforms** Arduino, Raspberry, STM32
- **Software** 3D Printing Softwares, Altium Designer, Solid Works

Language

English(Fluent), Persian(Native)

Non-Academical Activities

Agriculture, Camping, Hiking, Tennis

References

- **Cong Liu,** Associate Professor at University of California,Riverside, School of ECE — Ph.D. advisor
  Email: congl@ucr.edu *2022 - Present*
- **Sibin Mohan,** Associate Professor at George Washington University, School of SEAS — Ph.D. advisor
  Email: sibin.mohan@gwu.edu *2022*
- **Hadi Moradi,** Associate Professor at University of Tehran, School of ECE — B.S. advisor
  Email: moradih@ut.ac.ir *2018 - 2021*