Shahab Nikkhoo

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INTEREST

- **Robotics** — Swarm Robotic, Mobile Robot, Soft Robotic
- **Autonomous Systems** — UAVs, UGVs, Localization and Mapping
- **Cyber-Physical systems** — Real-time Embedded Systems
- **Machine Learning** — Reinforcement Learning, Deep Learning
- **CPS Security** — Side Channel Attack, False Data Injection

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*

RESEARCH EXPERIENCE

- **greedy agent** — UC Riverside
  Ph.D. project under Dr.Cong Liu supervision — *2022*
  - Gazebo multirobot simulation
  - Multi-Robot implimentation

- **Humanoid robot for children education and entertainment** — University of Tehran
  undergraduate final project under Dr.Hadi Moradi supervision — *2021*
  - Designed an omni-directional social robot to interact with children
  - Developed an interactive face on an android based tablet

- **Comprehensive autism screening system** — University of Tehran
  Research Assistant to Dr.Hadi Moradi — *2018 - 2020*
  - ROS Developer

- **Smart screening toy car for autistic children** — University of Tehran
  Research Assistant to Dr.Hadi Moradi — *2018 - 2020*
  - Embedded Designer
  - Cpp Developer

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) — *(remote) 2019*
  - Designed NDVI camera and tutored the process
  - Designed Arduino base board for collecting environmental characteristics

LEADERSHIP EXPERIENCE

- **Teaching Assistant,** Advanced Robotics course — Tehran, Iran
  University of Tehran — *2021*
  - Designed and graded projects and Home Works
  - Prepared instruction for ROS and Gazebo

- **Teaching Assistant,** Mechatronic course — Tehran, Iran
  University of Tehran — *2021*
  - Designed and graded projects
  - Prepared instruction for ROS and Gazebo

- **Teaching Assistant,** Real-Time Embedded Systems course — Tehran, Iran
  University of Tehran — *2020*
  - Mentored students in robotic instructions and robotic simulation applications

PUBLICATIONS

- **An Intelligent Toy Car for Autism Screening using Multi-Modal Features** *(under review)* Bijan Mehralizadeh, Bahar Baradaran, **Shahab Nikkhoo**, Pegah Soleiman, Hadi Moradi.

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

Selected 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
- **Health Characteristics Monitoring in Urban Areas**
  IOT
    - Urban social game for gathering information from people's health and monitor them on a web server
    - Designed the boards and made the server connections

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 Air Drone (autonomous UAV)
  International Robotic Competitions — *2018*

Skills

- **Languages**   Python, C++, C#, Bash, Embedded C
- **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*