Mohammad Khalili | CV

Control Master's Student

(+98) 919 184 7324 • md.kh71@gmail.com • mohakhalili.github.io

mohammad-khalili • mohakhalili

RESEARCH INTERESTS

- Legged Robots
- Locomotion Control
- Central Pattern Generators (CPGs)
- Rehabilitation Robotics

EDUCATION

- **Master of Science** Aug, 2022 (Expected)

  Qazvin Islamic Azad University
  - Electrical Engineering (Major: Control)
  - GPA: 16.97/20 (5.09/6) up to now
  - Thesis Title: Quadruped Locomotion Control Using Central Pattern Generators Based on the Nonlinear Oscillators and CPG Parameters Tuning Using Reinforcement Learning and Iterative Learning Control
  - Supervisor: Prof. Mohammad Bagher Menhaj

- **Bachelor of Science** 2016

  Qazvin Islamic Azad University
  - Electrical Engineering (Major: Control)
  - GPA: 15.99/20 (4.79/6) — Last Two Years : 17.56/20 (5.26/6)
  - Thesis Title: Battery State of Charge Estimation Using By Coulomb Counting Method
  - Supervisor: Dr. Ahmad Fakharian

HONORS

- RoboCup IranOpen Competition — Demo League 2009
- Ranked 6th Among 69 B.Sc. Graduated Students — GPA 15.99/20 2016
- Academic Scholarship For B.Sc. (Tuition Waived Due to Research Activities)
- Academic Scholarship For M.Sc. (Tuition Waived Due to Research Activities)

RESEARCH EXPERIENCE

SYNTECH Technology and Innovation Center, Qazvin Islamic Azad University (QIAU)

- Research Assistant at DowranSET Solar UAV Laboratory 2014-2017
  - PID Controller Design and Parameters Tuning Using Intelligent Methods (MATLAB)
  - Dynamic Equations Simulation of Multi-rotors (MATLAB)
  - Position Error Correction Using Complementary Filter (MATLAB)
  - Construction, Preparation and Testing of Multi-Rotors and UAVs
- Research Assistant at DowranSET Battery Laboratory 2017-2019
  - Lithium-ion Battery Modeling and Simulation Using EEC Models (MATLAB)
  - Lithium-ion Battery SOC Estimation Using Linear and Nonlinear Kalman Filters (MATLAB)
  - Lithium-ion Battery SOH Algorithm Design for Lithium-ion Battery Pack (MATLAB)
  - Analysis of Battery Pack Performance (MATLAB)
  - Lithium-ion battery Pack Preparation and Test
  - Research and Development on lithium-ion Battery Life Cycle prediction
  - Design and Implementation of Lithium-Ion Battery Life Cycle Testing Procedure Using High-Tech Battery Instrumentation (MATLAB)

Persian Gazelle IV, Solar Car Team, University of Tehran 2017

- Current Measurement Board Design and SOC Estimation of Battery pack
- Extraction of Charge and Discharge Cycle and Linearization for Calibration in Lithium-ion Battery

WORK EXPERIENCE

DowranSET knowledge-based Company, Qazvin Islamic Azad University(QIAU) 2018-present
- SLA Battery Modeling and Simulation Using EEC Models (MATLAB)
- SLA Battery SOC Estimation
- Design and Implementation of SLA Battery Life Cycle Testing Procedure Using High-Tech Battery Instrumentation (MATLAB)

PROJECTS

- Force Data Gathering Imported on The Human Body System
  - Embedded System Designing
  - Electrical System Designing
  - Importing Data to MATLAB via Wi-Fi Communication for the Purpose of Analyzing
  - Research and Develop
- Rescue Robot
  - Collecting Information by Camera and Sensors.
  - Manual Controlling Using Android Application
  - Transmitting Data via Wi-Fi.
- ARVIN Building Management System
  - Master Board PCB Designing (Altium Designer)
  - Raspberry Pi Setting up and Developing (Python)
  - Energy Management System Algorithm Developing (C/C++)
  - Embedded-Based Control System Designing and Implementing Along With an Android/IOS App to Monitor Ventilation, Lighting, Power and Security System
- EVs Battery Management System (BMS)
  - Research and Develop on SOC Estimation Methods
  - Lithium-ion Battery Modeling (MATLAB)
  - Lithium-ion Battery Test-bed Designing
  - Embedded System Developing for Current Measurement on ARM STM32 (C/C++)
- UPS Battery Monitoring System (BMS)
  - BMS Temperature Measurement Board Designing (Altium Designer)
  - SLA Battery Modeling (MATLAB)
  - Embedded System Developing for Battery Monitoring on ARM STM32 (C/C++)
  - Software and Hardware Test Procedures Designing and Results Documentation
- Y6 Multi Rotor
  - Flight Dynamics and Rotors Modeling
  - Position Error Correction Using Complementary Filter (MATLAB)
  - Fuzzy Logic PID Controller Designing and Modeling
  - Electrical Modules Assembling
- Motor Position Control
  - Hardware in the Loop PID Controller Design (MATLAB/Simulink)
  - Controller Parameters Optimization Using Intelligent Methods
  - Research and Develop on Advanced PID Controllers
- Dowran Solar UAV
  - UAV Flight Dynamics Researching and Modeling (MATLAB)
  - Solar Cell and Battery Pack Modeling (500 Wh)
  - Power Board Designing (100W Continuous Power)
  - Electrical Modules Assembling (Autopilot, Airspeed, Servos, Power Supply)

LANGUAGE SKILLS

- Persian Native
- English Fluent
  - IELTS Exam Aug, 2022 (Expected)

COMPUTER SKILLS

Programming

- Python
  - NumPy
  - SciPy
  - Pandas
  - PyBullet
- MATLAB
  - LMI Solvers
  - Curve Fitting
  - Optimization
  - Modeling
- C/C++
- HTML5/CSS3

IDEs/Tools

- VSCode
- PyCharm
- Codevision AVR
- IAR STM32 ARM
- STM CubeMX
- Git Version Control

Simulation

- MATLAB/Simulink
  - Control System Toolbox
  - Robotics System Toolbox
  - ROS Toolbox
  - Simscape
  - Simulink 3D Animation
- Webots
- ROS

Electrical Softwares

- Altium Designer
- Proteus

COURSES

Nonlinear Control
- Instructor: Prof. Mohammad Javad Yazdanpanah

Linear Matrix Inequalities (LMI)
- Instructor: Dr. Ahmad Fakharian

Adaptive Control
- Instructor: Prof. Mohammad Bagher Menhaj

Optimal Control
- Instructor: Dr. Ahmad Fakharian

Online Courses
- The Complete Python 3 Course: Beginner to Advanced — Udemy
- Introduction to Programming Using Python - University of Texas at Arlington — edX

REFERENCES

Mohammad Bagher Menhaj
Professor, Department of Electrical Engineering
AmirKabir University of Technology, Tehran, Iran.
(+98) 912 130 4513
menhaj@aut.ac.ir
mbmenhaj@qiau.ac.ir

Ahmad Fakharian
Associate Professor, Department of Electrical, Biomedical, Mechatronics Engineering, Azad University, Qazvin, Iran.
(+98) 912 237 0337
ahmad.fakharian@qiau.ac.ir
ahmad.fakharian@gmail.com

Farzad Razavi
Assistant Professor, Department of Electrical, Biomedical, Mechatronics Engineering, Azad University, Qazvin, Iran.
(+98) 912 177 3241
farzad.razavi@qiau.ac.ir
farzad.razavi@gmail.com

Last Updated on January 06, 2022