

Mohammad Khalili | CV

Qazvin Azad University—Department of Electrical, Biomedical and Mechatronics Engineering

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RESEARCH INTERESTS

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

EDUCATION

- **Master of Science** Aug, 2022 (Expected)
 - 📍 Qazvin Azad University (QIAU)
 - Electrical Engineering (Major: Control Engineering)
 - 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: Mohammad Bagher Menhaj
- **Bachelor of Science** 2016
 - 📍 Qazvin Azad University (QIAU)
 - Electrical Engineering (Major: Control Engineering)
 - 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: Ahmad Fakharian

HONORS

- RoboCup IranOpen Competition — Demo League 2009
- Ranked 6th Among 69 B.Sc. Graduated Students — GPA 15.99/20 (4.79/6) 2016
- Academic Scholarship For B.Sc. (Tuition Waived Due to Research Activities)
- Academic Scholarship For M.Sc. (Tuition Waived Due to Research Activities)

PUBLICATION

- Khalili, M. , Menhaj, M.B. & Fakharian, A. (2022). CPG Design for Quadruped Robots. (In Progress)

RESEARCH EXPERIENCE

- 📍 *SYNTECH Technology and Innovation Center, Qazvin 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 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
 - Pyomo
- 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

B.Sc.

- Linear Algebra (16.75/20)
- Linear Control Systems (16.5/20)
- Nonlinear & Digital Control Systems (19/20)
- Control Systems Simulation-MATLAB (18.25/20)

M.Sc.

- Robust Control (19/20)
- Optimal Control (20/20)
- Systems Identification (17/20)
- Linear Matrix Inequalities (LMI) (19/20)

Online Courses

- The Complete Python 3 Course: Beginner to Advanced
- Introduction to Programming Using Python - University of Texas at Arlington

Udemy
edX

REFERENCES

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