Taha A. Shafa

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Controls/Robotics Engineer

Engineering Design, Development and Implementation

Engineer on track to receive dual MS degrees in computer/electrical engineering and systems engineering focusing in control systems and robotics with relevant professional and research experience.

Education

Arizona State University (Dual MS) — Tempe, AZ
M.S. in Computer/Electrical Engineering (EE Track) — Anticipated Graduation: May 2020
M.S. in Engineering (Robotic Systems Track) — **Current GPA: 3.81**
Drexel University (Undergraduate) — Philadelphia, PA
B.S.E. in Electrical Engineering — June 2015

Fellowships and Grants

Engineering Graduate Fellowship, Arizona State University, 08/2018 – 04/2019
- Awarded for extraordinary academic achievements

Keen Research Grant, Arizona State University, 01/2019 – 04/2019
- Granted for outstanding research exemplifying the entrepreneurial mindset

Publication

ASME 2019 International Design Engineering Technical Conferences (IDETC2019)
- B. D. Shuch, T. Shafa, E. Rogers, and D. M. Aukes, "Design of a Two DOF Laminate Leg Transmission for Creating Walking Robot Platforms." 18-Aug-2019.

Research Projects

ASU Master's Thesis **– Design and Control of Laminate Bipedal Robot**
- Designed and prototyped bipedal roadrunner robot
- Developed simulations on python and unity for motor selection
- Derived model of bipedal robot for model-based control using Kane's method and Lagrange
- Applied robust LQR control design techniques to develop control system for balancing and walking

ASU Research Project **– Optimize Performance of 2DoF Laminate Quadrupedal Robot**
- Integrated previously incompatible servos and IMU
- Collected data from IMU linking robot orientation to leg movement
- Implemented PID controls to observe how controls affected previously collected data

Drexel Senior Design **– System Identification for Unknown Motor Parameters**
- Utilized SysID techniques to analyze input motor's frequency response and output transfer function
- Designed electromechanical fixture to accommodate motors of variable sizes
- Created PCB to run motors of various sizes with adjustable power outputs

Professional Experience

Electrical Design Engineer — Philadelphia, PA
Cardone Industries — June 2016 – June 2018
- Lead electrical and computer design processes to develop machines testing electromechanical car parts
- Develop analog and digital circuits that process input/output signals from electromechanical test units
- Program embedded controllers to automate test processes for large scale data acquisition
- Develop PID controllers to optimize design functionality
- Conduct R&D on electromechanical systems to determine optimal embedded system circuit design
- Create detailed electrical schematic of final circuit design using AutoCAD

Electrical Test Engineer (Contract Position) — West Chester, PA
CTDI (Communications Test Design Inc.) — February 2016 – May 2016
- Programmed automated test procedures in C# for quality control
- Reverse engineered and restored malfunctioning circuits
- Reverse engineered existing program in Amazon Echo devices to perform diagnostics
- Designed intuitive HMI for operating test fixtures

Hardware Engineer, (Contract Position) Norristown, PA
Megger June 2015 – December 2015

- Redesigned a battery charger circuit to operate without obsolete components
- Extensively redesigned the electrical PCB layout in cases without direct replacements available
- Conducted R&D tests on battery charger circuit to verify functionality

Electrical Engineer Thorofare, NJ
Checkpoint Systems September 2013 – March 2014 (Co-op)

- Conducted RF testing and circuit board testing for security antennas
- Performed circuit calculations and later verified calculations using PSpice simulation software
- Assembled $5,000 security antennas with 5 team members to meet company standards
- Performed testing on security tags to ensure the transceiver and tags would communicate properly

Extracurricular Activities & Other Interests

- **Sports/Activities –** Tennis, flag football
- **Languages –** Fluent in English and Farsi
- **Interests –** Saxophone, chess, fitness