Mohammad Jafari

Summary: Highly Skilled mechanical engineer with multifaceted experiences in both hardware and software. Strong hands-on skills and leadership obtained by leading multiple projects from concepts to prototypes or commercialized products. Passionate about exploring next generation of robotics.

Personal Data

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Education

Jan 2020 – Dec 2021 (expected)
M.Sc in Robotics , **Georgia Institute of Technology**, The United States
focusing on musician robots: Shimon the marimba player, SantoorBot
GPA: 4.0/4.0

FEB 2019 – Oct 2014
B.Sc. in Mechanical Engineering, **University of Tehran**, Iran
Thesis: Design and Development of Automatic Musical Instruments Tuner through Utilizing a Closed-loop Control System (Under Supervision of Dr. M. Ayati)
Cumulative GPA: 3.6/4

Research and Work Experience

Jan 2020 – Dec 2021
Research Assistant at Robotic Musicianship Laboratory, Georgia Institute of Technology
- Evaluate Shimon statically and dynamically to optimize it
- Gesture design for social robots to express emotions for human robot interactions
- Invention of a new musician robot to play traditional Persian instrument
- Design a rule-based system to generate music for the SantoorBot by considering regional Persian music styles

Mar 2019 – Aug 2019
Marketing Coordinator at Shaymo Advertising Agency

Aug 2018
Co-Founder at Behin Ava Pardaz
- Evaluation of musical instruments by processing their sounds
- Develop different products from design to prototype which help musicians to perform better

Aug 2018 – SEP 2017
Research Assistant at Advanced Instrumentation Laboratory, University of Tehran
- Process audio signals in order to tune them by the closed-loop control system
- Design and implementation of a control system for the actuator on AVR micro controller
- Design and manufacturing the product using CATIA and manufacturing by 3D-printer

Aug 2017
Intern at Omrab Company
- Design and development of water supply, piping, and water treatment units, with effective consultation of my supervisors
- Analysis the data gathered through inspection of water hammering points using Water GEMS and Water Hammer Software
- Compiled prediction and developed large-scale engineering models of piping systems
- Presented the test outcomes in written and oral forms

Patent

- **Mohammad Jafari**, Moosa Ayati, 2018, "Automatic Musical Instruments Tuner Tool Using Vibration Signals" from Iran Patent, 97208, filed March 2, 2018, and issued November 18, 2018

Honors and Awards

2021 1st place in Moog Hackathon National Competition
2020 Research Assistant fellowship from Georgia Institute of Technology, sponsored by Google
2018 3rd place in mechatronics competition at University of Tehran
2018 3rd place in ISOR (Iranian Society of Rheology) in poster presentation
2017 1st place in Portable Hammock Structure Competition at University of Tehran

Skills

- **L**anguages: English, Persian
- **C**AD: Solidworks, AutoCAD, Catia, Finite Element Analysis
- **P**rogramming: MATLAB, Python, C, C++, R, LabVIEW, ROS
- **P**rototyping: 3D printer, PCB (Eagles), Machining tools

Selected Academic Projects

- Development of SantoorBot from concept to prototype by designing in Solidworks and manufacturing by 3D printing and machining
- Designing the control system and programming the robot to read midi notes in real time system and performing on Santoor in both python and C++
- Designing and manufacturing new sticks and hands for Shimon robot to play drums with human quality sound and programming for different performances
- Inventing an interactive electronic instrument with Moog Wrekstatt, Arduino, Sensors such as hall, light,temperature and ultrasonic by adding different effects from MAX MSP.
- Generating gestures by programming them with python on ROS for Stretch robot from Hello robot company to express emotions and measuring human trust in interactions with the robot
- Synchronization between musician robots such as Shimon, SantoorBot and GuitarBot by creating a network and using real time protocol system for sending midi notes
- Using ultrasonic sensors with Arduino and mapping the data to trigger sound clips in Ableton live by creating M4L modules in MAX MSP
- Designing a Suspension System for a Vehicle Based on Quarter-Car Model Using MATLAB (Supervisor: Dr. M. Mahjoob)
- Developing a magnetic levitation system of a metal ball (Supervisor: Dr. A. Sadighi)