

# Parsa Yazdankhah

✉ [parsa.yazdankhah@gmail.com](mailto:parsa.yazdankhah@gmail.com) | [in](https://www.linkedin.com/in/parsa-yazdankhah) [parsa-yazdankhah](#) | [G](https://github.com/parsa-yazdankhah) [parsa-yazdankhah](#) | [globe](https://www.parsa-yazdankhah.ir) [parsa-yazdankhah.ir](#)

## EDUCATION

<b>University of Tehran</b> Bachelor of Science in <b>Mechanical Engineering</b> <ul style="list-style-type: none"><li>GPA: 3.86/4.0 (18.29/20)</li><li>Thesis Topic: Optimized Motion Planning and Navigation for <i>SURENA</i> Humanoid Robot Using Visual SLAM Algorithms for Obstacle Avoidance</li></ul>	2019 – Expected 2024 Tehran, Iran
<b>University of Tehran</b> Minor in Business Management <ul style="list-style-type: none"><li>GPA: 4.0/4.0 (18.62/20)</li></ul>	2020 – Expected 2024 Tehran, Iran

## RESEARCH INTERESTS

- Robotics / Soft Robotics
- Bio-inspired Systems
- Mechatronics
- Control
- MEMS Technology
- Machine Learning

## EXPERIENCES

<b>Research Assistant</b> Center of Advanced Systems & Technologies (CAST), University of Tehran <ul style="list-style-type: none"><li>Collaborated as a Dynamics and Control team member of <i>SURENA</i> humanoid robot</li><li>Executed a feasibility study and recommended an energy-efficient automated system for thermal inspection</li><li>Contributed in modal analysis of a structure through hammer impact testing</li></ul>	Feb 2022 – Present Tehran, Iran
<b>Teaching Assistant</b> School of Mechanical Engineering   College of Engineering, University of Tehran <ul style="list-style-type: none"><li>Mechatronics</li><li>Numerical Computations</li><li>Computer Programming</li><li>Calculus 1</li></ul>	Feb 2021 – Jun 2023 Spring 2023 Spring 2022 & Fall 2022 Fall 2021 & Spring 2022 Fall 2020
<b>Artificial Intelligence Intern</b> Cheetah Autonomous Vehicles Center, Sharif University of Technology <ul style="list-style-type: none"><li>Developed extensive python scripts within <i>CARLA</i> simulator (an open-source tool for autonomous driving research), executing algorithm deployment and evaluating performance against ground truth data</li></ul>	Jul 2023 – Sep 2023 Tehran, Iran
<b>Technical Manufacturing Intern</b> Behran Asanbar Industrial Group <ul style="list-style-type: none"><li>Accumulated hands-on experience while collaborating with a diverse set of equipment, including lathe machines, milling machines, drilling machines, CNC systems, and CAD tools</li></ul>	Jul 2021 – Oct 2021 Tehran, Iran

## PUBLICATIONS

- A.H. Vedadi, A. Yousefi-Koma, **P. Yazdankhah**, A. Mozayyan, “*Comparative Evaluation of RGB-D SLAM Methods for Humanoid Robot Localization and Mapping*”, ICROm 2023, 11<sup>th</sup> RSI International Conference.

## TECHNICAL SKILLS

<b>Programming:</b> Python   C/C++   MATLAB
<b>Design &amp; Analysis:</b> SolidWorks   CATIA   ANSYS   ABAQUS   MSC Adams   Maple   OpenSim   Proteus   COMSOL
<b>Simulators:</b> Simulink   Choreonoid   PyBullet   Gazebo   CarLa
<b>Miscellaneous:</b> ROS   Git   Linux   Arduino   MS Office   L <sup>A</sup> T <sub>E</sub> X

## SELECTED PROJECTS

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### **SURENA Humanoid Robot (5<sup>th</sup> Generation)** | *Python, C++, ROS, Git, Choreonoid, MATLAB*

- Designed an optimized motion planning algorithm utilizing visual SLAM methods for obstacle avoidance
- Developed an online trajectory planner utilizing the Divergent Component of Motion (DCM) method
- Enhanced the robot's Center of Mass (CoM) positioning through the redesign of upper-body components

### **Lower Limb Joint Angle Estimation from Vertical Ground Reaction Force** | *Python, TensorFlow, Git*

- Implemented a novel neural networks architecture to anticipate ankle, knee and hip joint angles from ground reaction forces of both soles
- Facilitated real-time gait analysis of subjects with minimal data

### **Solar Tracker System** | *Arduino, SolidWorks*

- Designed and constructed a functional prototype of a 2 DoF solar tracker system, including the successful integration of the control algorithm
- Optimized for rapid alignment and tracking of the light source

### **Identification and Control of a Serial Industrial Manipulator** | *MATLAB, Simulink, Simscape, Maple*

- Analyzed the dynamics of the *Motoman SK16* robotic arm, and implemented several classic controllers (CTC, Impedance, PID) to evaluate and contrast their respective performances
- Coupled two of these serial manipulators together to form a parallel robot, assessing its operational efficiency in comparison to the original serial robot

### **Study of Human Gait Metabolic Energy Consumption** | *OpenSim, MATLAB*

- Investigated metabolic energy consumption of walking, employing both active and passive assistive devices
- Proposed an optimal assistive device that effectively minimized muscle fatigue, mechanical workload and average metabolism

## SELECTED COURSES

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### **Academic Courses**

University of Tehran

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|--------------------------------------|---|
| • Rehabilitation Robotics            | • Automatic Control                       |
| • Mechatronics                       | • Introduction to Micro and Nano Systems  |
| • Optimization of Mechanical Systems | • Measurement Systems and Instrumentation |

### **Extracurricular Courses**

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|---|-----------------|
| • Machine Learning Specialization                             | Coursera        |
| - Supervised Machine Learning: Regression and Classification  |                 |
| - Advanced Learning Algorithms                                |                 |
| - Unsupervised Learning, Recommenders, Reinforcement Learning |                 |
| • IoT Hardware Practical Course                               | Iran IoT Center |

## LANGUAGE SKILLS

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**English:** Professional working proficiency

IELTS Band Score: **7.5** (L: 8.5, R: 8.5, S: 7.0, W: 6.5)

Issued: Sep 2023

**Farsi/Persian:** Native proficiency

**Turkish:** Bilingual proficiency

## HONORS & AWARDS

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- Ranked among the top 15% of class 2023 in School of Mechanical Engineering, University of Tehran
- Ranked among the top 0.3% of participants (164000 candidates) in the National University Entrance Exam
- Been granted full tuition fee waiver for the course of study at the University of Tehran

## REFERENCES

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<b>Dr. Aghil Yousefi-Koma</b>	Professor, School of Mechanical Engineering, University of Tehran. Supervisor of CAST Research Center	<a href="mailto:aykoma@ut.ac.ir">aykoma@ut.ac.ir</a>
<b>Dr. Ehsan Hosseinian</b>	Assistant Professor, School of Mechanical Engineering, University of Tehran	<a href="mailto:ehosseinian@ut.ac.ir">ehosseinian@ut.ac.ir</a>
<b>Dr. Ali Fahim</b>	Assistant Professor, Faculty of Engineering Sciences, University of Tehran	<a href="mailto:a.fahim@ut.ac.ir">a.fahim@ut.ac.ir</a>