

# MAHTA AKHYANI

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## RESEARCH INTERESTS

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- Human Robot Interaction, Social Cognitive Robots, Biomechanics, Assistive Technology, Bio-inspired Robots

## PUBLICATIONS

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- Submitted **Mahta Akhyani, Hadi Moradi**, "Modular Customizable ROS-Based Framework for Rapid Development of Social Robots" [Github](#) - [arXiv](#) [\[PDF\]](#)
- In Prepration **Pegah Soleiman, Mahta Akhyani, Alireza Kargar, Hadi Moradi**, "Empathy toward Robotic Social Environment vs. Human Social Environment, Comparison between people with Autism Spectrum Disorder and typically developing ones"

## EDUCATION

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- 2018 - 2023 **Bachelor of Science: Chemical Engineering**  
**University of Tehran** - Iran  
GPA: 15.63/20 (16/20 in the last 2 years)  
Subdiscipline: Biotechnology  
B.Sc. thesis (**Full Marked**) : **Design of mobile robot with SLAM capabilities for pipe inspection in chemical and petroleum industries** [Media](#) - [arXiv](#) [\[PDF\]](#)

## SKILLS

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### Proficient:

Python - ROS - Gazebo - Javascript - HTML/CSS - Robotics platforms (e.g. Raspberry Pi, Arduino, Jetson Nano) - Version control (Git) - 3D modeling (Solidworks)

### Experienced:

Django REST framework - Ubuntu - Machine Learning and AI (TensorFlow, Pandas, NumPy, Matplotlib)

### Intermediate:

C++, C, AVR, Computer vision and AI (OpenCV, MediaPipe, Praat)

## RESEARCH EXPERIENCE

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- 08/2022 - 10/2023 [Terahertz Photoelectronics Lab](#)  
*Department of Computer and Electrical Engineering, University of Tehran*  
Supervisor: Prof. Mohammad Neshat  
Project Title: **Electrically Conductive Mixed Matrix Membrane-Based 3-Layered Geometrically Matching Head Phantom** [More info](#)
- Synthesized and characterized polymers including PANI, PDMS, starch, RTV-2, graphene and carbon black for a multilayer head phantom through CPC and MMM fabrication
- 04/2022 - 07/2022 **B.Sc. Thesis Project** [Media](#) - [arXiv](#) [\[PDF\]](#)  
**Design of mobile robot with SLAM capabilities for pipe inspection in chemical and petroleum industries**
- Development of a sensor fusion pipeline integrating Kinect camera and IMU data to improve odometry estimates
  - Simulated and built a mobile robot platform and testing the ROS/Gmapping SLAM approach on it in a maze
- 06/2021 - Present [Advanced Robotics and Intelligent Systems Lab](#)  
*Department of Computer and Electrical Engineering, University of Tehran*  
Supervisor: Prof. Hadi Moradi  
Project Title: **Understanding Empathy Towards Social Robots and Its Implications for Individuals with Autism**
- Investigated whether humans exhibit empathy towards robot-robot interaction, compared to human-human interactions using EEG
  - Examined empathy displayed by individuals with autism towards robots vs. humans
  - Contrasted findings with neurotypical individuals
  - Examining joint attention responses of individuals with Autism in robotic and human social interactions
- Project Title: **Modular Customizable ROS-Based Framework for Rapid Development of Social Robots**
- Developed reusable robot skill modules (face analysis, speech processing, dialogue agents, actuator control)
  - Engineered a distributed data processing pipeline optimized for multiple sensors
- Project Title: **Designing Affective Expressions for Social Robots to Interact with Children with Autism** [Media](#)
- Utilized video/photo editing to design facial expressions for the robot
  - Synthesizing empathetic speech by a random forest model learned using extracted audio MFCC features with Praat

03/2019 - 02/2020 [Pharmacology Lab](#)

Department of Chemical Engineering, University of Tehran

Supervisor: Prof. Reza Zarghami

Project Title: **Chem-E-Car Competition** (Designed and constructed a car powered by synthesized chemical energy source and brake system)

## TEACHING EXPERIENCE

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Spring 2022

**Teaching Assistant**

**Advanced Robotics (Graduate)**

Department of computer and electrical engineering, University of Tehran

Lecturer: Prof. Hadi Moradi

- Provided hands-on tutoring to students on ROS-based localization techniques for Anki Vector robot

Winter 2021

**Teaching Assistant**

**Learning Python with Computer Vision approach**

[RoboTech Academy](#)

- Developed assignments and quizzes, and provided tutoring support to reinforce learning concepts

## VOLUNTEER EXPERIENCE

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05/2019 - 07/2019

**Self-Directed Volunteer Teacher**

Teaching Python fundamentals during summer to 12 students

## JOB EXPERIENCE

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04/2020 - 02/2021

**Co-founder and Leader of Fanjoo**

**Online platform for peer knowledge exchange and optional income**

Addressed gap between education and workforce needs by empowering users to gain in-demand technical skills outside traditional academia. [More info](#) - [GitHub](#)

**Skills achieved:**

- Effective Collaboration
- Self Disciplinary
- Project Management
- Team Leadership

10/2019 - 01/2020

**Django Backend Developer**

UTech Academy - Tehran, Iran

- Independent back-end Django REST developer [GitHub](#)

## CERTIFICATIONS AND EXTRA COURSES

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April 2022

**TOEFL Test**

- Overall Score: **97/120** (r27,l25,s22,w23)

Spring 2021

**Fundamentals of Mechatronics (Graduate-level)**

Department of electrical and computer engineering, University of Tehran, Iran

Lecturer: Prof. Mehdi Tale Masouleh

- Project Grade: **120 out of 80** (Extra Credit)
- Overall Grade: **19.5 out of 20**

Winter 2020

**Deep Learning and Computer Vision**

[RoboTech Academy](#)

Summer 2019

**Back-End Developing with Django**

UTech Academy

- Grade: **100/100**

Summer 2018

**Programming with Python**

[Tehran Institute of Technology](#)

- Grade: **95/100**

## HONOURS AND AWARDS

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Summer 2018

**University Entrance Exam top 0.7%**

Ranked top 0.7% in among 144000 participants in [IUEE](#) for B.Sc.

Spring 2017

**Best Provincial Project, 18th Khwarizmi Scientific Competition Youth Awards ([KYA](#)), Tehran**

Project Title: "Designing Different Types of Electrical Compass".

## REFERENCES

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Professor

**Prof. Hadi Moradi** [moradih@ut.ac.ir](mailto:moradih@ut.ac.ir)

Professor

**Prof. Reza Zarghami** [rzarghami@ut.ac.ir](mailto:rzarghami@ut.ac.ir)

Assistant Professor

**Prof. Mohammad Neshat** [mneshat@ut.ac.ir](mailto:mneshat@ut.ac.ir)

Lecturer

**Prof. Kambiz Shoarinejad** [kambiz1@ucla.edu](mailto:kambiz1@ucla.edu)