

# 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"

## INTERNSHIPS

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- Summer 2024 **Research Assistant, GIST (Gwangju Institute of Science and Technology), South Korea**
- Researching trust in Human-Robot Interaction (HRI)
  - Developing and implementing Trust-POMDP algorithm for human-exoskeleton interactions

## 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 - 07/2024 **[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 empathy in human-robot and robot-robot interactions using EEG, comparing responses of individuals with autism and neurotypical participants
  - Examined joint attention responses in autism for both 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
- Summer 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*
- 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)  
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)