

MAHDI BAGHERI

+989927202400



www.linkedin.com/in/mahdi-bagheri/



mahdid.m.2000@gmail.com



<https://github.com/mahdidBagheri/>

RESEARCH AND WORK EXPERIENCE

FEB 2022 – NOW (+1 year)

Augmented Reality for neuro navigation surgery using HoloLens 2

ARAssist Startup : Computer Vision Research Engineer

A new solution for neuro navigation surgeries makes the surgent able to see through a head-mounted device (HoloLens 2) and watch different modalities inside the patient's head.

- Developed the **registration system** capable of automatically detecting the patient's face and registering the CT-scanned 3D-Reconstructed mesh on it. ([Demo](#))
- Designed an error measurement scenario for measuring the **registration errors**.
- Developed the **tracking system** using QR code detection & localization.
- Designed an error measurement scenario for **tracking errors**.
- Designed **end-to-end error** measurement system.

FEB 2021 – APR 2022 (+1 year)

Cattle Counting – Multi Object Tracking (MOT)

Freelancer : Computer Vision Research Engineer

- Developed a **multi-object tracking system** to count cattle entering/exiting animal husbandry.
- Provided an **interactive web app** using Dash for the user to upload video, draw the border and be able to download results. ([Demo](#))

AUG 2021 – DEC 2021 (5 months)

Artificial Optical Sorter

Agricultural Robotics Lab : Technical Product Manager

- We studied optical sorters as a **machinery solution** for the pistachio industry.
- Implemented an **experimental setup**, using a Raspberry Pi board and camera to capture images from falling off pistachios and send them to a computational server to detect and classify by YOLOV5. Then controlling an Arduino board to activate a DC motor whether to accept or reject the object.
- The project ended up as my **B.Sc. thesis**. ([Demo](#))

JUN 2020 – AUG 2020 (3 months)

Computer Vision Intern: Facial Expression Recognition

Center of Excellence in Design, Robotics, and Automation (CEDRA) : Intern Student

A classification problem used for recognizing expressions of humans in front of a humanoid robot.

- Used VGG16 as the base model and trained it on the prepared dataset to be used for Rasa (a humanoid robot in the social and cognitive Lab)

FEB 2023 – APR 2023 (3 months)

Metal Sheet Stack Counter

Freelancer: Computer Vision Engineer

- Developed a program used in manufacturing companies to **automatically count metal sheet stacks**. ([Result](#))

JUN 2020 – AUG 2020 (3 months)

Foot Scanner

Ace Team: Computer Vision Engineer

- Gathered a team to take on a project, developing an application used in physiotherapy to process and **analyze foot-scanned images** to help physiotherapists design better insole. ([Demo](#))

EDUCATION

SEP 2018 – SEP 2023

B.Sc. in Mechanical Engineering and Minor in Computer Science

Sharif University of Technology

- B.Sc. thesis: Artificial Optical Sorters (Score 20/20)

SKILLS

- **Programming Languages:** Python / MATLAB / C++ / C / C# / Java / JavaScript
- **Libraries:** OpenCV / Pytorch / Open3D / Numpy / Scikit-Learn
- **Frameworks:** FastApi
- **Platforms:** Docker / Kubernetes
- **Databases:** PostgreSQL
- **Embedded Systems:** HoloLes 2 / RaspberryPi / Arduino
- **Soft Skills:** Teamwork / Creativity / Problem Solving

HONORS & AWARDS

- **Bronze medalist** in National Physics Olympiadⁱ (2017)
- Ranked **973** among **+300,000** in Iranian University Entrance Exam (2018)
- **Champion** team in IYPTⁱⁱ (2015) and 3rd in PYPTⁱⁱⁱ (2016)
- The **chosen** team at the Khwarizmi^{iv} award (2016)

ⁱ National Physics Olympiad is series of exams and educations holding by Young Scholar Club. Solving problems and doing experiments is what to be learned and evaluated. Students may compete in order to be chosen as top 40. For those who be chosen there is a 3 months education with best university professors and special credit for university entrance.

ⁱⁱ Iranian Young Physicists Tournament

ⁱⁱⁱ Persian Young Physicists Tournament

^{iv} Khwarizmi award is one the competitions in novelty and creativity in national level. Students may attend to present their inventions or researches. We have presented the research done later in IYPT 2016 ([Circle of light](#))