Aref Tabatabaei

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PROFESSIONAL PROFILE

Computer Vision Engineer with hands-on experience in both academic research and industry projects. Skilled in Python, machine learning, and full-stack development with a strong foundation in mathematics and algorithms. I've built real-time systems, deployed CV models at scale, and collaborated across hardware and software teams. Always eager to solve hard problems and deliver meaningful, production-ready solutions.

SKILLS & COMPETENCIES

Programming	Python, Golang, JavaScript, HTML/CSS
Frameworks & Tools	Django, FastAPI, React, PyQt, Docker, Git, ROS, Arduino
Deep Learning & CV	PyTorch, TensorFlow, OpenCV, NumPy, Scikit-learn
Computer Vision	Image Classification, Object Detection (YOLO), Segmentation (U-Net), Action Recognition, Image Generation (GAN, Diffusion), 3D Vision, Depth Estimation, Transformers, Attention
Systems & Databases	Linux, PostgreSQL, MySQL, Redis
Mathematics	Linear Algebra, Probability & Statistics, Optimization, Algorithms
Hobbies	Soccer, Chess, Hiking, Writing, Cooking

WORK EXPERIENCES

Hexan *Dec. 2024 - Apr. 2025*

Full-Stack Web Development

- Developed an admin panel for real-time truck fleet monitoring. Implemented the backend with Django and frontend with React. Integrated real-time camera data streaming and displayed live feeds within the panel for enhanced vehicle tracking and monitoring.

Sayal Sanjesh *Apr. 2024 - Current*

Full-Stack Web Development

- Developed and maintained a smart water management system with real-time meter control. Implemented the backend using Django and frontend with React. Collaborated with the hardware team by integrating an MQTT broker to enable reliable communication with smart water meter devices. Applied cybersecurity best practices—including authentication, API security, and data protection—as part of a project under AFTA (Iranian Cyber Security Degree).

Amirkabir University of Technology (Polytechnic Iran) *Dec. 2022 - Jan. 2024*

Undergraduate Research Assistant Under the Supervision of Prof. Maryam Amirmazlaghani | Statistical Machine Learning LAB

- **Text Integration Into Image**: Led a research project focused on embedding text within images while preserving visual coherence. Resulted in a published paper at the International Conference on Learning Representations (**ICLR**) Tiny Papers, where I served as the **primary author**.
- **Artifact Removal**: Conducted research to remove artifacts in virtual try-on and pose transfer tasks, resulting in a paper with a preprint available on arXiv, for which I was the lead author.
- **Image Generation & Denoising**: Worked with U-Net, GANs, and diffusion models, focusing on both mathematical foundations and implementation for image synthesis and processing tasks.

Allostasis *May. 2022 - Dec. 2022*

Computer Vision Developer

- **Custom Avatars**: Developed a pipeline to generate personalized 3D avatars from client images, working extensively with 3D file formats (GLTF, OBJ) and automation in Blender for mesh manipulation and rendering.
- **Human Detection & Tracking System**: Implemented real-time multi-person detection and tracking using MediaPipe and OpenCV, enabling robust posture-based control for interactive systems.
- **Avatar Control**: Integrated real-time camera input with Godot Engine, enabling dynamic avatar movement driven by user gestures and facial cues.
- Production Deployment: Dockerized multiple CV and game engine components for seamless deployment and scalability, including API services, real-time processing modules, and Blender-based rendering pipelines.

EDUCATION

Amirkabir University of Technology (Tehran Polytechnic)
Tehran, Iran
Sep. 2019 - Jan. 2024

Bachelor of Science in Computer Engineering

- **GPA: 3.1 / 4.0**
- **Selected Courses:** Computational Intelligence | Applied Linear Algebra | Algorithm Design | Engineering Statistics | Robotics | Database Design

PUBLICATIONS

ICLR Tiny Paper (2024)

- No More Blah-Blah: Embracing Real Text in the Image Synthesis World – First Author

Preprint (2024)

- A Conditional Inpainting Approach for End-to-End Artifact Removal in VTON and Pose Transfer – First Author

LEADERSHIP & VOLUNTEERING

- Head TA – Linear Algebra
- TA – Robotics, Embedded Systems, Algorithm Design
- Technical Staff – Linux Fest, Game Craft (Unity), AAISS Summer School

NOTABLE PROJECTS

Sign Language Detector

- Action recognition using custom LSTM model in PyTorch and Keras. Github Link

YOLO From Scratch

- Implemented YOLO object detection pipeline. Github Link

Cloth Segmentation

Undergraduate Research Project

- Customized U-Net for segmentation in PyTorch. Github Link

Robot Controller

Robotics Course, Prof. Javanmardi

- Controlled robots using the ROS platform, employing PID controllers and image processing techniques. Github Link

Detection Toolkit

- Multi-feature webcam/image-based detection system (faces, emotions, weather, etc.). Github Link

Document Browser

Information Retrieval Course, Prof. Nick Abadi

- Designed and implemented a search engine tailored for textual documents. Github Link

LANGUAGES

English
IELTS Academic: Overall Band Score 7 (R7.5, L7.5, S6.5, W6.0)

Persian
Native proficiency

Japanese
Elementary proficiency

ASL
Basic proficiency

AWARDS AND ACHIEVEMENTS

- **Alfond Scholars Initiative Scholarship – Estimated Value: $25,000, Northeastern University 2025**
- **Best Bachelor of Science AI Thesis – Amirkabir University, AAIC 2024**
- **Winner, 800m Running – Yazd Province Championship 2014**
- **Second Place, 3000m Running – Middle and South Region, Iran 2014**
- **Multiple Medals in Soccer – Yazd Province Competitions 2012 - 2017**