Omid Sadeghnezhad

omidsadeghnezhad97@gmail.com OmidSa75 omid-sadeghnezhad
https://www.sadeghnezhad.me Iranian

Profile

Experienced in machine learning engineering and deep neural network. I studied Master's Degree in AI & Robotics at the K.N.Toosi University of Technology. Throughout my career, I have gained valuable experience in developing ML models, implementing video and image processing pipelines, and software developments. I thrive in collaborative environments and am committed to continually developing my skills and staying up-to-date with the latest industry developments. With a passion for better human life with AI, I am driven to make a positive impact in my field and am excited to take on new challenges and opportunities. Currently, working on object detection and tracking applications, image processing, and camera streaming pipelines. Advanced in Python programming language and Have skills with C++. I am also interested in Generative and Diffusion models.

Research Interests

- Generative Adversarial Networks and Diffusion models especially in computer vision and image processing fields
- Object Detection and Tracking models
- Image processing and computer vision
- Signal processing and analyzing

Education

2020 – 2023 ● **K. N. Toosi University of Technology**
*M*aster's Degree
Artificial Intelligence.
Seminar: Generative Adversarial Networks (GAN) Survey

2015 – 2020 ● **Shahrood University of Technology**
*B*achelor's Degree
Electrical and Electronics Engineering.

Professional Experiences

2021 – present ● **Machine Learning Engineer**
*P*arsTech.Co

2020 – 2021 ● **Machine Learning Engineer**
*T*araTech.Co

2019 – 2020 ● **Internship**
*T*elecommunication Company of Iran

Skills

Languages ● Reading, writing and speaking competencies for English, Native Persian.

Skills (continued)

Coding	• Python, SQL, C, C++, LaTeX
Databases	• MySQL, SQLite, Redis
ML Frameworks	• Pytorch, Scikit-Learn
Misc.	• Multi Processing and Threading Programming, Managing Shared Memory in Python, Implementing API with FastAPI, Data Transferring with SocketIO, Task Queuing and Management with Celery, Image and Video Processing with OpenCV, Video Streaming and Create Pipeline with Gstreamer, Deep Neural Networks Implementation with PyTorch, Docker Container for DevOps, Version Controling with Git

Research Experience

- Evolutionary Algorithms and implementing Symbiotic Organisms Search algorithm (SOS) - *2023*
- GAN Developments survey and Analyze the Latent space. (Basic GAN, DCGAN ACGAN, WGAN, BigGAN, PGGAN, STYLEGAN, STYLEGAN2, StarGAN, SEAN) - *2022*
- Theories of Multimodal deep learning - *2021*
- Clothes virtual try-on models survey. (ACGPN, SwapNet, CP-VTON-PLUS) - *2020*
- Image harmonization and blending methods (Dovenet, DeepImageBlending), Brightness transfer (global and local transfer), color transfer methods (mean-std transfer, Lab mean transfer, and pdf transform), and color constancy with image to image translation (pix2pix, CycleGAN, and contrastive-unpaired-translation) - *2020*
- Image depth extractions (monoDepth, Pydnet) and salient object detection models (Basnet, U2Net, PoolNet, CPD) - *2020*

Projects

2022 - present • **Parstech Video Intelligent Assistant**
Intelligent Security Assistant
AI assistance to process and analyze videos with modules like human detection, face recognition, and license plate recognition. I deeply worked on human detection and restriction area application, Camera handling and streaming, DevOps, and microservices of this application.
- Human detection and tracking
- Video Processing with OpenCV
- FastAPI implementation for APIs
- Gstreamer and OpenCV cores for the Camera management service
- Task queueing and workflow management with Celery
- Containerized services
- In-Memory data transfer with Redis and python shared memory
- Multi-Processing and Multi-Threading features implemented

2022 • **LipReading model on Persian Dataset**
Train a LipReading model on the Persian dataset.

Projects (continued)

2021

Personal Protective Equipment (PPE)

Implementation of a system to identify personal safety equipment

A program to identify workers' safety equipment in workshop and construction environments, such as gloves, helmets, glasses, masks, safety vests, warning capabilities for people who enter prohibited areas, fire detection, and identification of work tools.

- Human detection and tracking
- Pose estimation to check human body status
- Body part localizer for head, hands, and chest
- Equipment classifiers models
- Pipeline implementation to estimate human fall
- Faster functions with numba jit compiler

Pressure Ulcer

Analysis of pressure sensor data of hospital beds for prediction and diagnosis of bed sores.

- Body Segmentation Models.
- Pose estimation model for pressure sensor data
- Video processing with OpenCV
- Signal Capturing from human poses

Cardiac Medical Data Augmentation

Train ACGAN on real Cardiac Medical Data in order to generate fake data for augmentation.

Human localization

In two categories of foreground and background images, it takes a personal image from the foreground, and in order to place it in the background image, it first finds the right place then masks the image and places it in the background, and then corrects the color and light also improves the image by a model.

- Depth Estimation
- Image brightness correction & Color correction models
- Object detection models to find humans and other objects in the Image.
- Image Perspective calculation
- Image blending

OCR

Optical Character Recognition on German administrative forms.

- Use tesseract and self-trained text recognition neural network.
- Use Clustering algorithms to find lines.
- Use OpenCV and Image processing methods to find information blocks.

Interests

- Guitar
- Nature Lover
- Video Game
- Psychology & Philosophy
- Ping Pong