Fatima Dehghan

Last Update: October 2021

A progressive, passionate and curious individual with three years' experience as a research assistant. Able to contribute perform research in *Machine Learning*, *Deep Learning*, and *Computer Vision* fields to gain the cutting-edge skills and grow my professional knowledge to become a useful researcher to society.

RESEARCH INTERESTS

■ Machine Learning ■ Deep Learning ■ Computer Vision ■ Medical Imaging

EDUCATION

March 2020 present

Yonsei University - Seoul, Korea

PhD., Electronic & Electrical Engineering

Fields:

> Machine Learning

> Computer Vision & Medical Imaging

September 2017 August 2019

Hongik University - Seoul, Korea

M.S., $Electronic \ \mathcal{E} \ Electrical \ Engineering$

Thesis : LPR & MCE Systems Implementation Using Mask R-CNN

GPA: 4.44/4.5 (99.33/100)

September 2011 August 2015

Yazd University - Yazd, Iran

B.S., Computer Software Engineering

Thesis: Clothing & Accessories E-Commerce Website Design

GPA: 15.30/20 (76.5/100)

Last 60 credits 17.25/20 (86.25/100)

RESEARCH EXPERIENCE

March 2020 June 2021

Research Assistant at MAI lab, Yonsei University

Project: Visual Speech Recognition Using Fusion of Facial Motion and Geometric Features

Machine Learning | Computer Vision

September 2017 August 2019

Research Assistant at AI & Robotics Lab, Hongik University

Projects

- > Implementing a Korean License Plate Recognition System Using Mask R-CNN
- > Developing a Household Object(s) Moving Cost Estimation System Using Deep Learning

Deep Learning | Computer Vision

July 2016 December 2016

Research Assistant at Control Lab, IRAN SSP

Project : Control of Industrial Motor Temperature Using a Nonlinear Model-free Neuro-fuzzy ARX Algorithm

System Identification | System Modeling | Control



2022 Automatic Korean License Plate Recognition Using Deep Learning Methods

Fatemeh Dehghan, Cho Seongwon

Applied Intelligence Journal (APIN) (Under Submission)

2017 Design Nonlinear Model-free Neuro-fuzzy ARX Algorithm to Control of System's

Temperature

Fatemeh Dehghan , Farzin Piltan , Maryam Sarostad , Nasri B.Sulaiman

Journal of Smart Home (IJSH) indexed by SCOPUS, Volume 11, Number 1, PP 139-153

2016 Nonlinear model-free control and ARX modeling of industrial motor

Maryam Sarostad , Farzin Piltan , Fatemeh Dehghan , Nasri B.Sulaiman

Journal of Smart Home (IJSH) indexed by SCOPUS, Volume 10, Number 12, PP 63-76





Silent Communication, SAMSUNG Company

2020 - 2021

Implementing a visual speech recognition system using the fusion of facial motion and geometric features. Python | Dlib | OpenCV | Keras | Tensorflow |

License Plate Recognition, UBIwave Company

2018 - 2019

Developing a desktop application that can recognize Korean license plates, classify their types and read them in both images and video streams

Python OpenCV Keras Tensorflow Mask-RCNN

Moving Cost Estimation, Hongik University

2017 - 2018

Implementing an android application (client) and a desktop application (server) to estimate household objects moving cost. The Android application sends the object photo to the desktop application. In the server, the volume of the object is measured using a deep learning model and then the moving cost is measured using the object volume and some other information such as the address, moving date, etc.

[Python] [Java] [XML] [OpenCV] [Keras] [Tensorflow] [Mask-RCNN]

Intelligent System Identification, IRAN SSP

2016 - 2017

Designing a nonlinear & linear controller to control the system's temperature and improve energy efficiency using neuro-fuzzy Auto Regressive eXternal model input (ARX) methodology.

[MATLAB] [Simulink]

Clothing & Accessories E-Commerce Website Design (BS Thesis Project)

2015 - 2016

Designing and implementing an online retail website for clothes and accessories.

[Joomla] [PHP] [HTML] [CSS]



Software Digital Camera

2020

Designing an Image Signal Processor (ISP) of software digital camera for a raw input image (Bayer CFA subsampled). Tasks: Color interpolation with two algorithms (Pei's method & Kimmel's method), noise Reduction on Y domain, Gamma correction on Y domain and Contrast Enhancement/Sharpening on Y domain while keeping UV color information.

C/C++

Visual Text to Speech System (VTTS)

2020

A system that generates computer-synthesized speech waveforms corresponding to a text in an image. Python OpenCV Tesseract

Continual Learning Using 16-layer VGGnet

2018

Adding the new task, face recognition, on top of a VGGNet which is already developed to classify images using Feature extraction, Fine Tuning and Learning Without Forgetting methods. The goal is to evaluate whether a model using these methods can learn a new task (face recognition) while preserving performance on old tasks (image classification).

[Python] [Keras] [Tensorflow]

CIFAR 10 Classification using Knowledge Distillation method

2018

Building a CIFAR 10 classifier by transferring knowledge from a VGGNet-16 architecture to a small customized CNN using the Knowledge Distillation method.

Python Keras Tensorflow

Face Recognition 2017

Developing a face recognition system that can recognize faces in both images and video streams. Python | OpenCV | Dlib |

Scientific Calculator Android App

2015

Building a scientific calculator in which several mathematical operations such as addition, subtraction, square root, factorial, and many more perform.

Java XML

Police+10 Website Design

2015

Designing and implementing a website for police+10 to automate their electronic services.

PHP | MySQL | HTML | CSS |

Emergency Android App

2014

An application designed for emergency situations. It consists of all emergency phone numbers (of 5 different countries) every person should know and the user can simply call emergency services using this app.

[Java] [XML]

Chat Console Application

2014

Multiple clients connect to a server and they can chat, just like in a chat room. There are two public and private chat options.

Socket Programming Java Python

University Education System

2013

Implementing an education system that can manage students, instructors, and courses information.

[Java]

Search Engine 2012

Developing a desktop application to search files or folders in a computer.

Course & Certifications

2021 Machine Learning by Stanford University, Prof. Andrew Ng

2021 **Fundamentals of Digital Image & Video Processing** by Northwestern University, Prof. Aggelos K. Katsaggelos

2021 MRI Fundamentals by KAIST University, Prof. Sung-Hong Park

2021 **Deep Leaning** by DeepLearning.AI, Prof. Andrew Ng

THONORS & AWARDS

2020 - 2021 Excellent International Student Scholarship, 21,000\$

The Office of International Affairs, Yonsei University

2020 Research Scholarship, 6,000\$

Dept. of Electronic & Electrical Eng., Yonsei University

2017 - 2019 Excellent Student Global Scholarship, 28,000\$

The Graduate School, Hongik University

2013 - 2015 Ranked 1st, in GPA among 70 students of Computer Software Engineering

(During four last semesters)

Dept. of Computer Engineering, Yazd University

A Languages

Persian (native) English (toefl ibt:95) Turkish

Turkish Korean Arabic



+ STRENGTHS

- ⋄ Patient
- ♦ Passionate
- ♦ Open-minded
- ♦ Flexibility & Adaptability
- \diamond Teamwork
- ♦ Responsible

SKILLS

Programming Language Python, Java, MATLAB, C/C++, LATEX, PHP, HTML, CSS, XML

Library Tensorflow, Keras, Pytorch, OpenCV, Dlib

IDEs PyCharm, Intellij Idea, MATLAB, Android Studio, QT, Microsoft Visual Studio,

Git, Adobe Dreamweaver, NetBeansL

Database & CMS Microsoft SQL Server, MySQL, SQLite, Joomla, WordPress

Operating System Linux (Pop OS, Ubuntu, Debian), Windows

Others Microsoft Office, LibreOffice, Photoshop, Adobe Premiere, Adobe After Effects,

Corel Video Studio Ultimate, AAA Logo, Sothink

Art Piano, Clip Making, Logo Design, Nail Implant & Design, Sculpting With Polymer Clay

Sport Swimming, Squash, Yuga, Tai Chi

66 REFERENCES

Provided Upon Request.