Fatima Dehghan

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Research Interests

Machine Learning **Deep Learning** **Computer Vision** **Medical Imaging**

Education

March 2020 (On LOA)
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 & 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 (Last 60 credits) : 17.25/20 (86.25/100)

Research Experience

March 2020 June 2021
Researcher at MAI lab, Yonsei University

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

Machine Learning | Computer Vision

September 2017 August 2019
Researcher 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
Researcher 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

Publications

2023 **Automatic Korean License Plate Recognition Using Deep Learning Methods**
Fatemeh Dehghan , Cho Seongwon
Applied Intelligence Journal (APIN) (Under Review)

2017 **Design Nonlinear Model-free Neuro-fuzzy ARX Algorithm to Control of System's Temperature**
Fatemeh Dehghan , Farzin Piltan , Maryam Sarostad , Nasri B.Sulaiman
Int'l. 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
Int'l. Journal of Smart Home (IJSH) indexed by SCOPUS, Volume 10, Number 12, PP 63-76

Projects

✔ *Research Projects*

Silent Communication, SAMSUNG Company 2020 - 2021

Implementing a visual speech recognition system using the fusion of facial motions 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

✔ *Notable Course Projects*

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.
Java

Course & Certifications

2021-22 **Machine Learning** by Stanford University, Prof. Andrew Ng

2021-22 **Fundamentals of Digital Image & Video Processing** by Northwestern University, Prof. Aggelos K. Katsaggelos

2021-22	**Deep Leaning** by DeepLearning.AI, Prof. Andrew Ng
2022-23	**AI for Medicine Specialization** by DeepLearning.AI, Pranav Rajpurkar
2022-23	**MRI Fundamentals** by KAIST University, Prof. Sung-Hong Park

Honors & 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

Languages

Persian (native) ●●●●●
English (toefl ibt:99) ●●●●●
Turkish ●●●●○
Korean ●●●●○
Arabic ●●○○○

Strengths

- Patient
- Passionate
- Open-minded
- Flexibility & Adaptability
- 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