ARMAN HAGHANIFAR

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EDUCATION

MSc in Biomedical Engineering

University of Saskatchewan (USask)

Sep 2019 – Now | Saskatoon, SK

- GPA: 85.75 / 100
- Research Area: Medical Image Processing, Application of Deep Learning/ Machine Learning in Healthcare
- Supervisor: Dr. S. B. Ko

BSc in Electrical Engineering – Electronics

Iran University of Science and Technology (IUST)

Sep 2013 – Mar 2018 | Tehran, Iran

- GPA: 15.65 / 20 (Last two years: 16 / 20)
- Thesis: Classification of Dental Caries from Admitted Patients' Clinical Symptoms based on Fuzzy Cognitive Maps and Genetic Algorithm
- Supervisors: Dr. M. R. Mosavi and Dr. A. Amirkhani

High School Diploma with a major of Physics and Mathematics

National Organization for Development of Exceptional Talents (NODET)

Sep 2009 – Sep 2013 | Sari, Iran

- GPA: 19.35 / 20

HONORS & AWARDS

- Received Full fund support for continuing graduate studies in master's program at the University of Saskatchewan
- Won 1st place in IoT Hackathon 2016 held by Iran's Internet of Things Free Society in Tehran, Iran.
- Ranked 1347th among more than 260000 participants in the 2012 nation-wide universities entrance exam. (Top 0.6%)

FIELDS OF INTERESTS

- Machine Learning
- Computer Vision & Image Processing
- Biomedical Image Analysis
- Data Science & Engineering
- Data Mining & Pattern Recognition

PUBLICATIONS

- A. *Haghanifar*, A. Amirkhani and M. R. Mosavi, **"Dental Caries Degree Detection based on Fuzzy Cognitive Maps and Genetic Algorithm,"** *26th Iranian Conference on Electrical Engineering (ICEE)*, Mashhad, Iran, 2018, pp. 976–81
  DOI: 10.1109/ICEE.2018.8472687

- A. Amirkhani, *A. Haghanifar* and M. R. Mosavi, **"Electric Vehicles Driving Range and Energy Consumption Investigation: A Comparative Study of Machine Learning Techniques,"** *5th Iranian Conference on Signal Processing and Intelligent Systems (ICSPIS)*, Shahrood, Iran, 2019, pp. 1–6
  DOI: 10.1109/ICSPIS48872.2019.9066042

- M. M. Majdabadi, *A. Haghanifar* and S. Ko, **"MSG-CapsGAN: Multi-Scale Gradient Capsule GAN for Face Super Resolution,"** *2020 International Conference on Electronics, Information, and Communication (ICEIC)*, Barcelona, Spain, 2020, pp. 1–3
  DOI: 10.1109/ICEIC49074.2020.9051244

- *A. Haghanifar*, M. M. Majdabadi and S. Ko, **COVID-CXNet: Robust Detection COVID-19 pneumonia in Frontal Chest X-ray Images using Deep Learning**
  (under review)

- *A. Haghanifar*, M. M. Majdabadi, S. Ko and S. Haghanifar **PaXNet: Dental Caries Detection in Panoramic X-ray using Ensemble Transfer Learning and Capsule Classifier**
  (under review)

TEACHING EXPERIENCE

Undergrad Teacher Assistant

Introduction to Computer Science (CMPT141)

Aug 2021 - Present | University of Saskatchewan

- Basic to intermediate programming skills in Python

Undergrad Teacher Assistant

Digital Design Course

Sep 2018 - Feb 2019 | Iran Univ. of Sci. and Tech.

- Instructor: Prof. S. Mirzakuchaki

Undergrad Tutor

AVR/Arduino Workshops

Jan 2017 - Jan 2018 | Electronics Research Center

- Providing undergrad students with AVR/Arduino workshops and extracurricular classes

WORK EXPERIENCE

VP of Operations

Engineering Graduate Community Council (EGCC)

Sep 2020 - Present Univ. of Saskatchewan

- Holding several workshops and providing mentorships to help grad students with both their academic challenges
- Holding two major events every year as the main activities in the College of Engineering: Engineering 3-Minute Thesis (E3MT) and Engineering Graduate Conference (EGR)

Data Mining Engineer

Vesta Talk Aria (Vestaak)

Apr 2018 – Aug 2018 Jordan Area, Tehran, Iran

- Working with Instagram, Telegram, and Twitter APIs
- Text extraction from PDF files
- Web crawling using different libraries (Selenium, Lxml)
- Plotting graphs using Graphviz library and dot language
- Implementing ML methods using Scikit-Learn and NumPy

Digital Circuit Design Intern

Rastin Iranian Company

Oct 2015 – Oct 2016 Narmak Area, Tehran, Iran

- Programming Languages: C, C++, VHDL, Verilog
- Hardware: Atmel AVR microcontrollers (ATtiny, ATmega), Xilinx Spartan FPGAs
- Software and Simulators: CodevisionAVR, ISE Suite, Altium Designer, Proteus Design Suite

Secretary

Electrical Engineering Student Scientific Association (EESSA)

May 2015 – May 2016 Iran Univ. of Sci. and Tech.

TECHNICAL SKILLS

Programming Languages:

- **Python 3.x**
- **MATLAB, GNU Octave**
- **C/C++**

Python Libraries:

- **TensorFlow 2.x, Scikit-Learn**
- **Numpy, Scipy, Pandas**
- **OpenCV, Scikit-Image, PIL**
- **Selenium, Lxml, Requests, SQLAlchemy**
- **PySpark**
- **Matplotlib, Seaborn, GraphViz**

General Tools:

- **Git**
- **SQL**
- **LaTeX**

SELECTED PROJECTS

Canine Disease Diagnosis based on Chemical Tests [GitHub]

- Structured data analysis and preprocessing
- Application of XGBoost and MLP for multi-label and multi-class classification

COVID-19 Pneumonia Screening in Chest X-rays [GitHub]

- Image Classification using CNNs
- Transfer Learning based on CheXNet (radiologist-level pneumonia detection network based on DenseNet)
- Visualization using Grad-CAM and LIME algorithms
- Collecting largest public dataset of COVID-19 patient CXRs

Electric Vehicles Fueling Data Analysis with Machine Learning [GitHub]

- Consumption Rate Deviation Classification
- Driving Range Estimation
- Crawling data from SpritMonitor

Tooth Extraction and Dental Caries Classification in Panoramic Images [GitHub]

- Image segmentation
- Enhanced Sauvola thresholding algorithm
- Image classification using CNNs

Implementing Situation Recognition Tree-based Service (SitRTS) in Python

- Situation recognition tree-based service/ Decision trees
- Situation similarity finder algorithm

Dental Caries Degree Detection based on Fuzzy Cognitive Maps (FCM) and Genetic Algorithm (GA) [GitHub]

- Fuzzy cognitive maps/ evolutionary algorithms/ binary classification/ Structured data processing

REFEREES

Upon request.