Sepehr Babapour

+1 (514) 910 9835 • babapour.sepehr@gmail.com • sprbpr.github.io
sprbpr • sprbpr

Education

Université de Montréal, Montréal, Canada **Sep 2023 – Present**
Master's of Computer Science GPA: -/4

Related Courses:

- Fundamentals of Machine Learning (In Progress)
- Data Science (In Progress)

Iran University of Science and Technology, Tehran, Iran **Sep 2017 – Mar 2022**
Bachelor of Computer Engineering GPA: 3.94/4

Related Courses:

- Deep Learning (20/20)
- Computer Vision (20/20)
- Natural Language Processing (20/20)
- Computational Intelligence (18.75/20)
- Artificial Intelligence (19.5/20)
- Algorithm Design (19.75/20)
- Data Structure (19.75/20)
- Signals and Systems (19/20)

Iran Atomic Energy High School, Tehran, Iran **Sep 2013 – Jul 2017**
Diploma of Mathematics and Physics GPA: 19.13/20

Achievements:

- Semifinalist in Olympiad on Astronomy and Astrophysics
- Semifinalist in Olympiad on Physics

Honors and Awards

UdeM Exemption Scholarship - 2nd Cycle **2023 – 2024**
Université de Montréal, Montréal, Canada

Direct Admission to Pursue M.Sc. Without Entrance Exam. **2020 – 2021**
Sharif University of Technology, Tehran, Iran

Outstanding Undergraduate Student Rank #1 **2019 – 2020**
Iran University of Science and Technology, Tehran, Iran GPA: 19.31/20

Outstanding Undergraduate Student Rank #1 **2018 – 2019**
Iran University of Science and Technology, Tehran, Iran GPA: 18.76/20

Outstanding Undergraduate Student Rank #1 **2017 – 2018**
Iran University of Science and Technology, Tehran, Iran GPA: 18.82/20

Research Experiences

Sharif University of Technology, Tehran, Iran **Sep 2022 – Jul 2023**
Computer Vision Researcher

For the first time, I delved into the realm of medical images, dedicating considerable time to literature reviews and gaining insights into prevalent methodologies. My focus narrowed to the crucial aspects of explainability and interpretability in medical imaging, particularly exploring generative models like the GANterfactual model. Through a comprehensive investigation, I scrutinized the strengths and weaknesses of these methodologies with the goal of refining and enhancing their efficacy.

Iran University of Science and Technology, Tehran, Iran **Mar 2021 – May 2022**
Computer Vision Researcher

We implemented an automatic and semi-automatic face dataset generator to build a huge face dataset by which we can train generative models such as Generative Adversarial Networks. During the research

process, I've been learning more about pose detection, image quality assessment, face recognition and face clustering.

IPM Institute for Research in Fundamental Sciences, Tehran, Iran **Jun 2021 – Nov 2021**

Deep Learning Researcher

We proposed a new data-aware compression approach, called DANA, to effectively utilize both sparsity and similarity in inputs and weights. I was in charge of code optimization, testing models such as MobileNet, UNet, and CifarNet and working with WIDER FACE, iMaterialist, Fashion MNIST, and CIFAR-10 datasets. I was also responsible for results visualization by exploiting packages such as Seaborn and Matplotlib.

Tehran Institute for Advanced Studies (TeIAS), Tehran, Iran **Jul 2020 – Mar 2021**

Natural Language Processing Researcher

As an active participant in Dr. Pilehvar's Natural Language Processing undergraduate reading group, I engaged in diverse topics ranging from Text Classification to Named Entity Recognition and Image Captioning. The sessions exposed me to various concepts, including Word Embeddings, Text Debiasing, Seq2Seq Models, Attention, Transformers, BERT, and mBERT models. The nature of these sessions required extensive paper reading, enhancing my ability to read and skim papers for educational purposes.

IPM Institute for Research in Fundamental Sciences, Tehran, Iran **Aug 2020 – Feb 2021**

Computer Vision Researcher

During this period, I built and developed a project called Fashion Mirror under the supervision of Dr.Falahati. Fashion Mirror is a tool to assist potential buyers in the process of online shopping. The user can select any clothes and visualize how they look on them using Fashion Mirror simply by uploading a picture of themselves. In this project, I used the Detectron 2 model and achieved the intended goal by combining the features provided by Detectron 2 with traditional Computer Vision techniques such as eroding and dilating.

IPM Institute for Research in Fundamental Sciences, Tehran, Iran **Jul 2019 – Sep 2019**

Backend Developer Intern

We implemented a web server to automate Robo-DIMM, a telescope to monitor the night sky and weather of the Iranian National Observatory site. We worked in teams of two and learned socket programming, design patterns, and how to cooperate as a team. I was also responsible for converting the interface written in C# to Python.

Related Projects

Persian Automatic Speech Recognition with Transformer **Jul 2021**

Final Project of Deep Learning Course

For this project, initially, we gathered Automatic Speech Recognition (ASR) data from international Persian movies with Persian subtitles consisting of 4842 pairs of Sentences and Voices. Afterward, we implemented a series of speech-to-text models from a simple RNN model to more complicated ones using transformer blocks to increase its performance.

Multi-Attribute Recipe Dataset **Jul 2021**

Final Project of Natural Language Processing Course

To start with this project, we developed a web scrapper to gather cooking recipes and related information from a cooking website. Moreover, we performed NLP tasks such as Word2Vec, Tokenization, and Parsing on the recipes. Afterward, we developed our own Language Model based on this dataset. In the end, we used this language model to build our generative model capable of generating custom recipes with the given information.

Distorted Car Number Plate Detection **Feb 2021**

Final Project of Computer Vision Course

Throughout this project, we used both traditional computer vision methods (Canny, Adaptive Threshold, Open, Close) and deep learning models (Modified InceptionResNetV2 models) to classify three types of

images: full decent car number plates, distorted car number plates, and images with no car number plates in them.

Teaching Experiences

Teacher Assistant

- **Deep Learning**, Iran University of Science and Technology, (Fall – Winter 2021), Dr.Mohammadi.
- **Artificial Intelligence**, Iran University of Science and Technology, (Fall – Winter 2020), Dr.Etemadi - Dr.Pilehvar.
- **Fundamentals of Programming**, Iran University of Science and Technology, (Fall – Winter 2019), Dr.Etemadi.
- **Logical Circuits**, Iran University of Science and Technology, (Fall – Winter 2019), Dr.Falahati (Head of 5 TAs).

Mentor

- **Algorithm Design and Analysis**, Iran University of Science and Technology, (Winter – Spring 2021), Dr.Etemadi.
- **Data Structure**, Iran University of Science and Technology, (Fall – Winter 2020), Dr.Etemadi.

Online Certificates

Coursera

- **Neural Networks and Deep Learning** , DeepLearing.AI, (Aug 2020), [Certificate].
- **Using Python to Access Web Data** , University of Michigan, (Jul 2020), [Certificate].
- **AI For Everyone** , DeepLearing.AI, (Jul 2020), [Certificate].
- **Python Data Structures** , University of Michigan, (Jul 2020), [Certificate].
- **Programming for Everybody** , University of Michigan, (Jul 2020), [Certificate].
- **Data Structures** , University of California San Diego, (Jul 2020), [Certificate].
- **Advanced Algorithms and Complexity** , University of California San Diego, (Jun 2020), [Certificate].
- **Algorithms on Strings** , University of California San Diego, (May 2020), [Certificate].
- **Algorithms on Graphs** , University of California San Diego, (May 2020), [Certificate].
- **Algorithmic Toolbox** , University of California San Diego, (May 2020), [Certificate].

Skills

Natural Languages

- Persian (Bilingual Proficiency)
- French (Beginner)
- English (TOEFL iBT Score: 93/120 - R: 23/30, L: 28/30, S: 21/30, W: 21/30)

Programming Languages

- Python
- C#
- C++
- C
- LaTeX

Machine Learning/Data Visualisation

- Keras
- TensorFlow
- OpenCV
- NLTK
- Seaborn
- Matplotlib
- Pandas
- Scikit-Learn
- Numpy
- Scipy

References

Dr. Sauleh Eetemadi (sauleh@iust.ac.ir)
Computer Engineering Department - Iran University of Science and Technology

Dr. Mohammad Taher Pilehvar (mp792@cam.ac.uk)
Computer Science Department - Tehran Institute for Advanced Studies (TeIAS)

Dr. Nasser Mozayani (mozayani@iust.ac.ir)
Computer Engineering Department - Iran University of Science and Technology