FERESHTEH FORGHANI

CONTACT INFORMATION
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RESEARCH INTERESTS
Machine Learning, Deep Learning, Computer Vision, Autonomous Driving, Medical Image Analysis, Artificial Intelligence

EDUCATION

Sharif University of Technology, Tehran, Iran
B.S. in Computer Engineering *2017-present*
Major GPA : **19.45**/20 , GPA till now : **18.53**/20 (**3.96**/4)
Coursework :

CNNs for Visual Recognition (Stanford CS231n, online, audited), Machine Learning (20/20), Artificial Intelligence (19.9/20), Modern Information Retrieval (18.7/20), Probability and Statistics (18.6/20), Linear algebra (19.5/20), Signal processing (19.1/20), Data Structures and Algorithms (18.3/20), Advanced Programming (20/20)

Farzanegan High School, National Organization for Development of Exceptional Talents(Nodet), Iran
Diploma in Mathematics and Physics *2013 - 2017*
GPA : **19.90**/20

RESEARCH EXPERIENCE

Internship at Ecole Polytechnique Federale de Lausanne (EPFL)
Advised by Prof. A. Alahi, Visual Intelligence for Transportation (VITA) Lab *Jul 2021-present*
Realistic Adversarial Attack on Human Trajectory Predictor

- Conducted a literature review on density estimation techniques and their applications on human trajectory data.
- Used Masked autoregressive flow to find natural adversarial examples to test the reliability of human trajectory predictors.
- Adversarially trained LSTM based predictors and reduced the **collision rate** up to **35%** in the case of adversarial attack on test data.

Research Assistant at Sharif University of Technology *Oct 2020-present*
Advised by Prof. Mohammad Hossein Rohban, Medical Image Analysis Group, Department of Computer Engineering
Used unsupervised learning frameworks (simCLR, MoCo, SimSiam) to train U-net encoder with unannotated cell images
Cell Segmentation using a Self-supervised Framework

- Used unsupervised learning frameworks (simCLR, MoCo, SimSiam) to train U-net encoder with unannotated cell images.
- Improved IoU score after fine-tuning with annotated ones **up to 6%**.

WORK EXPERIENCE

Machine Learning Intern at Sinaweb Company *Summer 2020*
Intrinsic Plagiarism detection

- Extracting lexical, structural, and syntax features.
- Proposed a regression model to fuse features and predict writing style.
- Implemented an outlier detection model to find possible plagiarised segments.

PRESENTATIOIN
Mahmoudinia E, **Forghani F** , Mohammad-Rahimi H. Medical image segmentation with limited annotated data using a self-supervised and generalized framework. Poster presented at : 2021 EMBL Symposium ; October 2021.

TECHNICAL SKILLS

Languages and Tools:

- Programming: C/C++, Python, Java
- Data Manipulation: Pandas, SQL
- Vision/ML Libraries: TensorFlow, PyTorch, Numpy, Scikit-Learn, NLTK, OpenCV
- Hardware: MIPS32, Verilog

Web and Mobile app Development: Django, HTML, CSS, JS, Android, Swift
Operating Systems: Windows, Macintosh

SOCIAL SKILLS

Teamwork, Fast Learner, Problem Solving, Creativity

UNIVERSITY PROJECTS

- Cleaned data and trained models to find best clickthrough rate, Machine Learning Course Project (Python) *Fall2020*
- Preprocessed, classified and clustered english Ted Talks and persian wikipedia pages in order to design an information retrieval system with search and query correction abilities, Modern Information Retrieval Course Project (Python) *Fall 2020*
  Project Github Link
- Food recipe provider app which provided recipes from Spoonacular api, Mobile programming Course Project (Android) *Spring 2021*
  Project Github Link
- Appointment making website, System Analysis and Design Course Project (Django framework)
  Project Gitlab Link *Spring 2020*
- Farm frenzi game, Advance Programming Course Project (Java) *Fall 2018*
  Project Github Link

HONORS AND AWARDS

National University Entrance Exams (Konkur) 2017
Ranked 125^{th} among 150,000 in Mathematics and Physics.
Ranked 101^{th} among 6,500 in English Language.

Member of national ELITE foundation *2017 - Present*
Recipient of the Grant for Undergraduate Studies from the Iranian National Foundation of Elites.

Recognized as talented student in entry exam of NODET among students for middle and high school. *2010 and 2013*

TEACHING EXPERIENCE

Teaching Assistant (Sharif University of Technology)

- Machine Learning (graduate course), Dr. A. Hosseini *Spring 2021 & Fall 2021*
- Artificial Intelligence, Dr. MH. Rohban *Spring 2021*
- Computer Architecture, Dr. H. Asadi *Spring 2021*
- Computer Structure and Language, Dr. L. Arshadi *Fall 2020*
- Digital Design, Dr. Sh. Hesabi *Spring 2020*
- Computer Structure and Language, Dr. H. Asadi *Fall 2019*
- Advance Programming, Dr. B. Hatami *Spring 2019*

VOLUNTEER EXPERIENCE

Member of Data Days Scientific Group (DataDays - A Machine Learning and Data Science Competition) Sharif University of Technology *Nov 2019 - Mar 2020*
Contestant of Webelopers (A web competition) Sharif University of Technology *Oct 2019*
Data Days Executive Staff, Sharif University of Technology *Feb 2019*
ACM Executive Staff, ACM-International Collegiate Programming Contest *Dec 2018*
Sharif AI Executive Staff, Sharif Artificial Intelligence Challenge *Mar 2018 and Mar 2019*

LANGUAGES

English (Fluent)

- **TOEFL : 109/120**
  Reading : 30/30, Listening : 30/30, Speaking : 26/30, Writing : 23/30

Persian (Native)