

Erfan Alimohammadi

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Research Interests

- Computer Vision
- Machine Learning
- Big Data
- Algorithm Design and Data Structures

Education

Politecnico di Milano

M.Sc. IN INTERNET ENGINEERING (TELECOMMUNICATION ENGINEERING AND COMPUTER SCIENCE JOINT TRACK)

Milan, Italy

Fall 2021 - present

Shahid Beheshti University

B.Sc. IN COMPUTER ENGINEERING

Tehran, Iran

Fall 2015 - Winter 2020

- One of Iran's 4 top universities
- Selected courses: Fundamentals of Programming (20/20), Advanced Programming (20/20), Discrete Mathematics (19.75/20), Data Structures (20/20), Design and Analysis of Algorithms (19/20), Computer Graphics (18.5/20), Bachelor's Thesis Project (20/20)

Research Experience

Detecting Unnecessary Code, as a Research Intern at KTH Royal Institute of Technology

Summer 2020 (Stockholm, Sweden)

- This research internship was done under the supervision of [Prof. Monperrus](#) for using graphs and machine learning in program analysis.
- I analyzed static call graphs to detect code that can be deleted without affecting the software's project expected functionality.
- I designed a framework for Java programmers, which is available on [GitHub](#).

Thatcher Illusion and Its Effects on the Face Recognition Problem (Using VGGFace2)

2020

- Done by me as a Shahid Beheshti University Computer Vision Group member.
- Awarded as the best bachelor's thesis project in the university.
- The paper is being prepared to be submitted to Perception Journal, under the supervision of Prof. Ebrahimi Moghaddam.
- A small part of its source code (only the dataset generator) is available on [GitHub](#), and its presentation slides are available [here](#).

Supervised and Unsupervised Methods for Satellite Images Super Resolution

2020

- Done in Balad Maps company to create larger satellite images for Iran maps to be used in production.
- After testing new ideas on [this](#) and [this](#) papers, I compared different methods on real large (300+ GB) datasets, based on PSNR metric.

Using Planar and Bipartite Graphs for Map Merging

2019

- Done under the supervision of Prof. Amin Gheibi as a computational geometric problem.
- Our purpose was to merge two maps of a city by modeling them to graphs and polygons (using NumPy, Matplotlib, and NetworkX).
- I presented this research as a [guest speaker at the 21st ACM-ICPC Asia Tehran Regional Contest](#). The presentation slides are available [here](#).

Professional Experience

Data Scientist

Tehran, Iran

[BALAD MAPS](#)

Fall 2019 - Summer 2021

- Balad is the most popular maps and navigation application in Iran, with a user-base of almost 5 million people.
- Wrote some ETLs and Improved the traffic prediction accuracy using time series forecasting models and PySpark (on big data servers).
- Used Variational Autoencoders in PyTorch, planar graphs, R-trees, etc., on real large (20+ GB) datasets.
- Interviewed many people and helped Balad set the hiring process (as a member of the hiring committee).

Software Engineer

Tehran, Iran

[CAFE BAZAAR](#)

Spring 2016 - Spring 2018

- Cafe Bazaar is the most popular and successful Android application store in Iran, with a user-base of more than 40 million people.
- A member of the Inline Apps team and the App Discovery team (while handling more than 300000 requests per hour).
- Interviewed many people to help Cafe Bazaar with the hiring process.
- Developed an admin panel for the executive team of Cafe Bazaar, using Python Django, HTML, CSS, and Javascript.
- Developed a platform for Android developers to create Android apps, which there is no installation needed for them.

Online Courses

- [Machine Learning by Stanford University](#)
- [CS231n: Convolutional Neural Networks for Visual Recognition](#)

Honors and Awards

ACM-ICPC AND IOI RELATED

2017	Silver Medal , ACM-ICPC Asia Tehran Regional Contest	<i>Tehran, Iran</i>
2017	56th Rank , ACM-ICPC World Finals (from among 133 teams chosen from a field of 46,381 contestants)	<i>South Dakota, USA</i>
2016	1st Rank , ACM-ICPC Asia Lahore Regional Contest	<i>Lahore, Pakistan</i>

PROJECTS

2013	The Best Project Award , Allame Helli High School Seminar (for an AVR-programmed project)	<i>Tehran, Iran</i>
2011	The Best Project Award , 8th NODET Young Researchers Festival (for " Persian Letters OCR " project)	<i>Tehran, Iran</i>

OTHER

2021	59th Rank , The Nationwide Entrance exam of Iranian universities (from among 10000 graduated students)	<i>Tehran, Iran</i>
2019	80th Rank , Huawei Neural Networks Challenge (an onsite competition among 124 selected universities)	<i>Porto, Portugal</i>
2018	Completed All Levels , Google FooBar (a secret challenge by Google, to examine your Java or Python skills)	

Teaching and Mentoring Experience

TEACHING ASSISTANTSHIP

Computational Intelligence , Dr. Malek , Determining and grading the course projects.	<i>Fall '20</i>
Design and Analysis of Algorithms , Dr. Ghavamizadeh , Held weekly TA sessions. Determined and graded numerous computer assignments.	<i>Spring '18, Fall '18, Spring '19</i>
Data Structures , Dr. Abin , Held all TA sessions. Determined and graded the course projects.	<i>Fall '17, Spring '18, Fall '18, Spring '19</i>
Statistics and Probabilities , Dr. Safaei , Handled general responsibilities.	<i>Fall '18</i>
Data Structures , Dr. Ebrahimi Moghaddam , Handled general responsibilities.	<i>Fall '18</i>
Advanced Programming , Dr. Vahidi-Asl , Held several TA sessions. Graded a computer assignment.	<i>Spring '17</i>
Discrete Mathematics , Dr. Safaei , Helped with handling several TA sessions.	<i>Spring '17</i>
Discrete Mathematics , Dr. Abdoos , Helped with handling several TA sessions.	<i>Spring '17</i>
Fundamentals of Programming , Dr. Abdoos , Held several TA sessions (with extra contents about Linux OS). Determined a computer assignment.	<i>Fall '16</i>

OTHER

Young Scholars' Club , Taught the medalist students of National Olympiad in Informatics	<i>Fall 2020</i>
Shahid Beheshti University , Coached a team which got a bronze medal at ACM-ICPC Asia Tehran Regional Contest (two times)	<i>Fall 2019, Fall 2020</i>
University of Tehran ACM Chapter , Taught algorithm design and data structures	<i>Fall 2018</i>
Allameh Helli High School , Prepared students for Iranian National Olympiad in Informatics	<i>Summer 2015</i>

Skills

Technical: C++, Python (Django, PyTorch, scikit-learn, PySpark, Cython), Java, Docker, Ubuntu, Bash, Raspberry Pi, Adobe Photoshop
Languages: Persian, English (Duolingo English Test: [130](#) equivalent to TOEFL iBT [110](#), GRE: quant 164 verbal 146 writing 3)

Selected GitHub Projects

Fake Job Posting Detection	<i>2020</i>
• Classifying job postings with deep learning (using PyTorch, Pandas, Skorch, and scikit-learn basic NLP tools)	
Commit Type Detection	<i>2020</i>
• Classifying Git commits with deep learning (using PyTorch, Pandas, and scikit-learn basic NLP tools)	
Map Coloring	<i>2019</i>
• Backtracking on graphs for coloring a map with four colors (using NumPy, Matplotlib, and OpenCV)	

Other Activities

Opensource Contribution: to a [repository](#) with more than 90000 users, as one of [TheAlgorithms](#) organization maintainers
International Problemsettings: [CodeChef COOK104](#), [HackerEarth March Circuits '19](#), [CodeChef LTIME70](#), [Codeforces #261](#)