Erfan Alimohammadi

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Research Interests

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

Education

KTH Royal Institute of Technology — *Stockholm, Sweden*

Research Intern — *2020*

- Using graph and machine learning algorithms for solving software and program analysis problems, under supervision of Prof. Martin Monperrus

Shahid Beheshti University — *Tehran, Iran*

B.Sc. in Computer Engineering — *2015 - 2020*

- Selected courses: Introduction to Programming (20/20), Advanced Programming (20/20), Discrete Mathematics (19.75/20), Data Structures (20/20), Design and Analysis of Algorithms (19/20), Bachelor's Thesis Project (20/20), Computer Graphics (18.5/20)

Allameh Helli High School — *Tehran, Iran*

Diploma in Mathematics and Physics Discipline — *2011 - 2015*

- Affiliated with the National Organization for the Development of Exceptional Talents (NODET)

Professional Experience

Data Scientist — *Tehran, Iran*

Balad Maps — *2020*

- Balad is the most popular maps and navigation application in Iran, with a user-base of almost 5 million people.
- Determined the possible locations of speed bumps and traffic lights of Tehran, while storing users' GPS locations on big data servers.
- Used Variational Autoencoders in PyTorch, planar graphs, R-trees, etc. on real large datasets.
- Interviewed many people and helped Balad with setting the hiring process (as a member of the hiring committee).

Software Engineer — *Tehran, Iran*

Cafe Bazaar — *2016 - 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 App Discovery team and Inline Apps team.
- Interviewed many people to help Cafe Bazaar in 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 some Android apps which there is no installation needed for them.

Research Experience

Thatcher Illusion and Its Effects on the Face Recognition Problem (Using VGGFace2) — *2020*

- I am a member of Shahid Beheshti University Computer Vision Group.
- Awarded as the best bachelor's thesis project in the university.
- The paper is being prepared to be submitted on Perception Journal, under supervision of Prof. Ebrahimi Moghadam.
- A small part of its source code is available on GitHub.

Supervised and Unsupervised Methods for Satellite Images Super Resolution — *2020*

- Was done for Balad Maps to create larger satellite images for Iran maps and to be used in production.
- I compared different methods on real large (300+ GB) datasets, based on PSNR metric.

Using Planar and Bipartite Graphs for Map Merging — *2019*

- This research was done under supervision of Dr. 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 21th ACM-ICPC Asia Tehran Regional Contest.

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

Projects

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

Other

2020	**96th Rank**, The Nationwide Entrance exam of Iranian universities (from among 10000 graduated students)	*Tehran, Iran*
2019	**80th Rank**, Huawei Neural Networks Challenge (an onsite competition among 124 selected universities)	*Porto, Portugal*
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.	*Fall '20*
Design and Analysis of Algorithms, Dr. Ghavamizadeh, Held weekly TA sessions. Determined and graded numerous computer assignments.	*Spring '18, Fall '18, Spring '19*
Data Structures, Dr. Abin, Held all TA sessions. Determined and graded the course projects.	*Fall '17, Spring '18, Fall '18, Spring '19*
Statistics and Probabilities, Dr. Safaei, Handled general responsibilities.	*Fall '18*
Data Structures, Dr. Ebrahimi Moghaddam, Handled general responsibilities.	*Fall '18*
Advanced Programming, Dr. Vahidi-Asl, Held several TA sessions. Graded a computer assignment.	*Spring '17*
Discrete Mathematics, Dr. Safaei, Helped with handling several TA sessions.	*Spring '17*
Discrete Mathematics, Dr. Abdoos, Helped with handling several TA sessions.	*Spring '17*
Fundamentals of Programming, Dr. Abdoos, Held several TA sessions (with extra contents about Linux OS). Determined a computer assignment.	*Fall '16*

Other

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

Skills

Technical: Pascal, Delphi, C++, Python, Java, Git, Django, 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 Projects

Fake Job Posting Detection *2020*
- Classifying job postings with deep learning (using PyTorch, Skorch, and scikit-learn basic NLP tools)

Commit Type Detection *2020*
- Classifying Git commits with deep learning (using PyTorch, and scikit-learn basic NLP tools)

Map Coloring *2019*
- 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