

# Erfan Alimohammadi

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☎ (+39)3317382539 | ✉ [erfan.aa@gmail.com](mailto:erfan.aa@gmail.com) | 🏠 [erfaniaa.github.io](https://erfaniaa.github.io) | 📄 [github.com/erfaniaa](https://github.com/erfaniaa) | 🔗 [linkedin.com/in/erfan-alimohammadi](https://linkedin.com/in/erfan-alimohammadi)

## Research Interests

- Computer Vision
- Machine Learning
- Artificial Intelligence
- Algorithm Design and Algo trading

## Education

### Politecnico di Milano

M.Sc. IN TELECOMMUNICATION ENGINEERING (COMPUTER SCIENCE 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

### Software Engineer (ML)

KWANTIS

Milan, Italy

Fall 2021 - Summer 2022

- Creating, deploying, and leading time-series ML projects on oil and gas real live data

### Software Engineer and Data Scientist

CAFE BAZAAR AND BALAD MAPS (BOTH ARE MANAGED BY HEZARDASTAN HOLDING)

Tehran, Iran

Spring 2016 - Summer 2021

- Was a Software Engineer at Cafe Bazaar, which is the most popular and successful Android application store in Iran.
- A member of the Inline Apps team and the App Discovery team (while handling more than 300000 requests per hour).
- 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.
- Was a Data Scientist at Balad, which is the most popular maps and navigation application in Iran.
- 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).

## Online Courses

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

## Honors and Awards

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### ACM-ICPC AND IOI RELATED

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

### PROJECTS

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

### OTHER

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

## Teaching and Mentoring Experience

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### TEACHING ASSISTANTSHIP

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

### OTHER

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

## Skills

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**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

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<b><a href="#">Backtester and Trading Bot</a></b> <ul style="list-style-type: none"><li>Easy-to-use frameworks for algo-trading</li></ul>	<i>2022</i>
<b><a href="#">Fake Job Posting Detection</a></b> <ul style="list-style-type: none"><li>Classifying job postings with deep learning (using PyTorch, Pandas, Skorch, and scikit-learn basic NLP tools)</li></ul>	<i>2020</i>
<b><a href="#">Commit Type Detection</a></b> <ul style="list-style-type: none"><li>Classifying Git commits with deep learning (using PyTorch, Pandas, and scikit-learn basic NLP tools)</li></ul>	<i>2020</i>

## Other Activities

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**Opensource Contribution:** to a [repository](#) with more than 140k users, as one of [TheAlgorithms](#) organization maintainers  
**International Problemsettings:** [CodeChef COOK104](#), [HackerEarth March Circuits '19](#), [CodeChef LTIME70](#), [Codeforces #261](#)