Ali Mollahosseini

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Education

2023 - Present **Master of Science in Computer Engineering – Artificial Intelligence**
Tehran University, Tehran, Iran

2019 – 2023 **Bachelor of Science in Computer Engineering – Intelligent Systems**
Isfahan University of Technology (IUT), Isfahan, Iran
GPA – 18.02/20 (ranked 4 among 80 CE students)

2016 – 2019 **Diploma in Physics and Mathematics Discipline**
National Organization for Development of Exceptional Talents (NODET)

Publications

Paper Link **A Centrality Based Genetic Algorithm for the Graph Burning Problem**
Mahdi Nazeri, **Ali Mollahosseini**, Iman Izadi
Elsevier Applied Soft Computing, 2023.

Research Experience

Oct.2023 - Present **Research Assistance at NUS**
Under supervision of Prof. Wee Sun Lee

○ I am collaborating with a team of graduate students at NUS to develop a cutting-edge solution for CMU's Open Catalyst Project, aims to find new catalysts using AI to address energy challenges.

○ I am currently implementing k-DisGNN, an state-of-the-art geometric model, for this challenge, and comparing its results with other methods.

○ In the upcoming months, it is expected to develop a model that aims to improve k-DisGNN and leverages transformers, following the approach utilized in EquiformerV2.

Sep.2022 - Sep.2023 **IUT Game Theory and Mechanism Design Lab**
Under supervision of Dr. Mohammad Hossein Manshaei

○ Conducted unpaired image-to-image translation between gene expression data and pathology images. Evaluated the results with a methods similar to hits@k.

○ Utilized Generative Adversarial Networks (ACL-GAN) and unsupervised tabular interpretation methods (GenoMap) in order to convert gene expressions to its possible pathology image.

Jan.2022 - July.2022 **IUT Electrical and Computer Department**
Under supervision of Dr. Iman Izadi

○ Utilized Genetic Algorithm and centrality measures to design a method for solving the Graph Burning Problem called CBAG. The open-source code can be found here.

○ Compared CBAG to other state-of-the-art algorithms on various benchmarks. CBAG showed significantly better performance and improved the results on benchmark tests.

○ Published the results in the Applied Soft Computing Journal, 2023.

Experience

2020 – 2022 **IUT ACM Chapter**
IUT ACM Student Chapter Vice Chair

○ Founding member of IUT's first national collegiate programming contest called IUT-CPC in 2020, which had more than 300 teams participants.

○ Organized a team of 40 people to hold the second series of IUT-CPC in 2022. More than 300 students from more than 30 different universities and high schools have participated.

Summer 2022	**Arsses Data Processing Company** **Machine Learning Developer Intern**
	o Utilized machine learning model DETR to develop a video classifier for violence, and customized for the company's small dataset.
Summer 2021	**Ergo Foundation** **Blockchain Developer**
	o Developed a crowdfunding service called ErgoRaffle, utilizing scala and sigma-script for writing transactions on Ergo blockchains. The service is available at ergoraffle.com.
Summer 2020	**Mohaymen ICT Company** **Software Engineer Intern**
	o Utilized Play framework to enhance functionality of a local social media which the company was working on at the time.

Honors and Awards

o Ranked **1st Place** International Ergo Hackaton Contest with 5100$ Grant 2021 🌐
o Ranked **Sixth Place** in 46th ICPC West Asia Regional Contest, 2022 🌐
o Ranked **Tenth Place** in 45th ICPC West Asia Regional Contest, 2021 🌐
o Ranked **Seventh Place** in 44th ICPC West Asia Regional Contest, 2020 🌐

Selected Teaching Experience

Teaching Assistance

Spring 2022	**Design and Analysis of Algorithms,** *MR. Heidarpour, Homework design and problem solving*
Spring 2022	**Artificial Intelligence,** *Hossein Falsafain, Homework design and Head TA*
Spring 2022	**Hardware Description Language,** *Majid Nabi, Evaluation of Homeworks & Problem solving*
Autumn 2021	**Theory of Languages and Automata** *Hossein Falsafain, Homework design & Problem solving*
Spring 2020	**Discrete Mathematical Structures,** *Aref Karimi Afshar, Homework design & Problem solving*

Course Instructor

Spring 2022	**Problem Solving and Algorithms with a Creative Approach,** *Instructor and Lecturer* Co-organised and tutored a course for students eager to learn algorithms in a creative way.
Autumn 2019	**Olympiad In Informatics for Students,** *Course Instructor and Mentor* Mentored high school students for a year to prepare them for National Olympiad in Informatics.

Skills

o **Programming Languages**: Python, C, C++, Java, R, Scala, Matlab
o **Machine Learning Tools**: TensorFlow, Keras, PyTorch, Numpy, Pandas, Scikit-Learn
o **Libraries and Technologies**: QT, Play Framework, Selenium, Scrapy; Docker, Blockchains
o **Languages**: English (TOEFL iBT 104: R29 L25 S23 W27, GRE 325: V155, Q170), Persian (Native), Arabic (Pre-Intermediate)

Relevant Coursework

Selected IUT Audited Courses

o Deep Learning
o Machine Learning and Pattern Recognition
o Statistical Inference

Online Audited Courses

o Foundations of Deep Learning 🌐
o Deep Reinforcement Learning 🌐
o Deep Learning 🌐
o Generative Adversarial Networks (GANs) 🌐
o Deep Learning for Computer Vision 🌐
o Machine Learning with Graphs 🌐