Mahmoud Aslan

Budapest, Közraktár u. 22b, 1093 Hungary

📱 +36303395579 | in mahmoudaslan

✉ mahmoudaslan@student.elte.hu

🏠 mahmoudaslan.web.elte.hu

Education

MSc Computer Science for Autonomous Systems, Eötvös Loránd University

2020 - present, Budapest, Hungary

- Grade (Estimated): 4.92/5.0 (Excellent)
- Thesis (Distinction): Extending Sparse Dictionary Learning for Adversarial Robustness, Advisor: András Lörincz.
- Key Courses: 3D Computer Vision, Reinforcement Learning, Data Mining, Optimization Methods, Control Theory, Deep Learning.

BSc Informatics Engineering, Al-Baath University

2013 - 2018, Homs, Syria

- Grade: 81.437% (Very Good)
- Thesis: Improving Network Intrusion Detection using a Denoising Autoencoder with Dropout (repository ⎘), Advisor: Suhel Hammoud.
- Key Courses: Algorithms & Data Structures, Software Engineering, Database Systems, Artificial Intelligence, Information Theory.

Experience

Research Assistant, Neural Information Processing Group, Eötvös Loránd University

May 2021 - present, Budapest, Hungary

- Research focus: Structured and Convolutional Sparse Coding, Iterative Optimization, Dictionary Learning, Adversarial Robustness in Object Recognition. Advisor: András Lörincz.
- Implemented FISTA based sparse networks, studying their behavior under various regularizations to increase the discriminative power of the representation while bridging the gap to theory.
- Tested different architectural variations by including reconstruction shortcuts between layers to remedy vanishing gradients.
- Performed extensive empirical studies on Soft Thresholding using sparse, group sparse, and pooled group sparse representations.
- Published the results in DeLTA 2022 and contributed the implementations to the group's codebase using Pytorch.

Python Developer, Aylan

Jan. - Jul. 2019, Remote, Jordan

- Collected a dataset of 10,000 Arabic news articles annotated into two classes.
- Implemented a data preprocessing pipeline to deal with the particularities of the Arabic language.
- Experimented with different NLP classification models using Tensorflow, the final deployed model reached an accuracy of 88%.

Web Developer, IT Advice

2017 - 2018, Homs, Syria

- Worked on three projects using vanilla web technologies focusing on performance. Got recognized by Awwwards.com (merit ⎘).

Publications

Structural Extensions of Basis Pursuit: Guarantees on Adversarial Robustness, *Dávid Szeghy, Mahmoud Aslan, Áron Fóthi, Balázs Mészáros, Zoltán Milacski, and András Lörincz.* Proceedings of the 3rd International Conference on Deep Learning Theory and Applications - DeLTA, INSTICC. SciTePress, 2022. ⎘

Select Projects

Arabic Font Classification, synthesizing data and addressing domain mismatch challenges, blog post. ⎘ - 2020

Cocat, a collaborative computer-assisted translation tool, project preview. ⎘ - 2019

Cyclic Learning Rate, an implementation of the CLR paper, repository. ⎘ - 2019

SubX, an application to display subtitles over presentations and control them independently, project page. ⎘ - 2017

Awards & Fellowships

Scientific Students' Associations Conference (TDK ⎘) - 1ˢᵗ place, Eötvös Loránd University, Dec. 2022

Extended our previous publication to include Hard Thresholding with deeper networks and mutual coherence regularization. Our work was nominated to the national conference (OTDK ⎘), to be submitted for a journal publication.

Graduate Research Fellowships, Eötvös Loránd University, May 2021 - pres.

My work with the Neural Information Processing Group ⎘ is funded under the following projects: ELTE-Bosch Scholarship ⎘, MOBOT: 2020-1.1.2-PIACI-KFI-2020-00115 ⎘, MILAB: RRF-2.3.1-21-2022-00004 ⎘, and the Thematic Excellence Programme no.: 2020-4.1.1.-TKP2020 ⎘ and TKP2021-NVA-29 ⎘.

Stipendium Hungaricum Scholarship, Tempus Public Foundation, Sep. 2020 - 2022

Full, 4-semester, MSc degree scholarship.

Digital Arabic Content Competition - 2ⁿᵈ place, Syrian Virtual University, 2019

Developed a business plan and a prototype for a collaborative computer assisted translation tool using Django, Git, and Docker.

Competitive Programming Contestant, Syrian Collegiate Programming Contest, 2014 - 2015

Third place and Solid Programmer awards in the local 2014 contest, for more details please check my ICPC ID. ⎘

Technical Skills

Proficient: Python, Pytorch, Scikit-learn, NumPy, Pandas, Matplotlib, SQL, Docker, Git, LaTeX.

Familiar: Kubernetes, Kubeflow, MLflow, Seldon, TensorFlow.js.

Prior Experience: Javascript, C++, Java, Django, HTML, CSS.

Languages

English, C1 CEFR ⎘, IELTS overall score: 7.5 (issued Jun. 2019)

Arabic, Native

Extracurricular & Volunteering Activities

Startup Weekend Homs ⧉, co-Organizer, 2018
TEDxMimasStreet ⧉, Technical Team Member, 2017
Al-Baath Collegiate Programming Contest, System Team Member, 2017
Syrian Collegiate Programming Contest, Site Volunteer, 2016