Mahdi Nikdan

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Vienna, Austria

Availability: Immediate start, on-site or remote, flexible hours, and open to extended durations

EDUCATION

- **Institute of Science and Technology Austria (ISTA)** Sep. 2021 - expected Sep. 2026
  Ph.D. candidate in Computer Science, supervised by Prof. Dan Alistarh
  Topic: Efficient training of neural networks
- **Sharif University of Technology, Iran** Sep. 2016 - Jul. 2021
  B.Sc. in Computer Engineering

PUBLICATIONS

- **M. Nikdan***, S. Tabesh*, E. Crnčević, and D. Alistarh, "RoSA: Accurate Parameter-Efficient Fine-Tuning via Robust Adaptation." Preprint 2024. [link]
- **M. Nikdan***, T. Pegolotti*, E. Iofinova, E. Kurtic, and D. Alistarh, "SparseProp: Efficient Sparse Backpropagation for Faster Training of Neural Networks." Oral at ICML 2023, and Spotlight in Sparsity in Neural Networks (SNN) Workshop 2023. [link]
- A. Bitarafan, **M. Nikdan**, and M. Soleymani Baghshah, "3D Image Segmentation with Sparse Annotation by Self-Training and Internal Registration," in IEEE Journal of Biomedical and Health Informatics 25.7: 2665-2672, 2020. [link]

RESEARCH EXPERIENCE

- **Ph.D. Candidate at ISTA** Sep. 2021 - present
  - Introduced *RoSA*, a parameter-efficient fine-tuning algorithm inspired by robust principal component analysis, particularly effective for challenging fine-tuning tasks where low-rank adaptation (*LoRA*) struggles, outperforming full fine-tuning in many cases.
  - Proposed *SparseProp*, the first algorithm to leverage unstructured sparsity for faster neural network training. Complemented it by efficient CPU implementations achieving significant training speedups (3.6x on 95% sparse ResNet18).
- **Research Intern at EPFL, Switzerland** Jul. 2020 - Dec. 2020
  - Implemented cross-modal contrastive learning and test-time training techniques to identify and mitigate distribution shifts in vehicle trajectory prediction. Supervised by Prof. Alexandre Alahi.
- **Research Assistant at Sharif University of Technology, Iran** Jul. 2019 - Mar. 2020
  - Under the supervision of Prof. Mahdieh Soleymani, introduced *3D-SegReg* for weakly-supervised 3D medical image segmentation, resulting in a notable 7% increase in F1-score on the CHAOS challenge compared to the leading method at the time, with reduced supervision requirements.

HONORS AND AWARDS

- **Iran's National University Entrance Exam** Sep. 2016
  Ranked among top 0.1% in Mathematics and Physics.
- **Iran's National Mathematical Olympiad** Sep. 2015
  Won a silver medal. Awarded National Elites Foundation Fellowship.

OTHER EXPERIENCE

- **Industry Internship at Quera Co., Iran** Mar. 2021 - Jun. 2021
  Designed an online Git course (in a team of three), purchased by 2000+ users in Iran.
- **Trade Management Plugin Development** Jan. 2021 - Apr. 2021
  Created *Nutricula* (in a team of four), a MetaTrader plugin offering intuitive and flexible trade management solutions. *Nutricula* received acclaim from numerous trading experts in Iran and currently has 1000+ premium users. [link]

Languages/Technical Skills: Python (torch), C++, AVX/AVX2, Git, Java, PHP, SQL, MQL
Hobbies: Chess (1800 FIDE Elo rating), Volleyball