

Ali AGHABABAEI

📍 Room 324, Laboratoire d'Informatique de Grenoble, University of Grenoble Alpes ✉ Email

☎ +33 638 233343 💻 aah94.github.io 🔗 LinkedIn 🎓 Scholar

Summary

I am a final-year Ph.D. student at Université Grenoble Alpes, supervised by Professor Massih-Reza Amini. My research explores model efficiency and representation learning within machine learning and deep learning, with the goal of designing scalable and practical AI systems.

Education

Université Grenoble Alpes

2023 - Present

Ph.D. in Computer Science [🔗](#)

- **Research:** Deep Learning Efficiency, Representation Learning

Sharif University of Technology

2018 – 2022

M.Sc. in Computer Science [🔗](#)

- **Coursework:** Deep Learning, Speech Processing

University of Tehran

2013 – 2018

B.Sc. in Electrical Engineering

- **Coursework:** Linear Algebra, Pattern Recognition, Digital Signal Processing

Research Interests

Deep Learning Efficiency

- Tensor Decomposition
- Knowledge Distillation
- Model Pruning
- Memory, Training and Inference Time

Representation Learning

- Semi-Supervised Learning
- Pseudo Labeling
- Contrastive Learning

Inverse Problems

- Image Denoising
- Image Super Resolution
- MRI and CT Imaging

Research Experience

Ph.D. Thesis

2023 - Present

APTIKAL team [🔗](#)

- Developed an innovative approach to reduce computational complexity and parameters of deep learning models using **tensor decomposition** techniques.
- Designed a **constraint-based loss** function to identify optimal tensor decomposition ranks for pre-trained models, enhancing model efficiency while preserving accuracy.
- Developing new method for efficient deep learning training by improving greedy supervised learning . Proposed **LoRA residual blocks, label grouping, and information-preserving penalties** to reduce distribution shift and information loss.
- Working on semi-supervised learning, particularly **pseudo-labeling**. Investigate why bias does not destabilize training in pseudo-labeling, developing **theoretical insights and adaptive contrastive loss** methods to address it.

Research Collaborator

2021 – 2022

University of Basel [🔗](#)

- Conducted analysis of inverse problems, including image denoising, limited-view computed tomography (CT), and wave scattering, utilizing invertible neural networks.
- Approximate data distribution with normalizing flow to identify out-of-distribution samples, improving model robustness and reliability.

M.Sc. Thesis

2018 – 2021

Electronic Research Institute [🔗](#)

- Proposed a patch-wise feature analysis approach for identifying forgery in video frames, aimed at enhancing deepfake detection capabilities.
- Developed a straightforward method to enhance the generalization and robustness of deepfake detection models.

B.Sc. Thesis

2016 – 2017

University of Tehran

- Designed and implemented a video quality meter to assess video quality in terms of blockiness and blurriness distortions in a no-reference mode.

Publications

Unified Framework for Pre-trained Neural Network Compression via Decomposition and Optimized Rank Selection

Sep 2025

Ali Aghababaei-Harandi, Massih-Reza Amini

[ECML-PKDD 2025](#) [🔗](#)

Deep variational inverse scattering

Mar 2023

AmirEhsan Khorashadizadeh, *Ali Aghababaei-Harandi*, Tin Vlašić, Hieu Nguyen, Ivan Dokmanić

[EuCAP 2023](#) [🔗](#)

Conditional injective flows for Bayesian imaging

Feb 2023

AmirEhsan Khorashadizadeh, Konik Kothari, Leonardo Salsi, *Ali Aghababaei-Harandi*, Maarten de Hoop, Ivan Dokmanić

[IEEE Transactions on Computational Imaging](#) [🔗](#)

Skills

Programming Tools: Python, Pytorch, Tensorflow, Java

Theoretical: Pattern Recognition, Design and Analysis of Algorithms, Creative Problem Solving