NIKOLAOS DIMITRIADIS

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SUMMARY

I am a last-year PhD student at EPFL under the supervision of François Fleuret and Pascal Frossard where I focus on understanding the weight space and loss landscape of neural networks, such as Large Language Models (LLMs) and Generative models, and leverage these insights to develop efficient algorithms for model merging, task arithmetic and multi-task learning. I have also completed an internship in Google DeepMind, where I worked on editing text-to-image generative models to obtain new capabilities.

EDUCATION

École Polytechnique Fédérale de Lausanne (EPFL) — Lausanne, Switzerland
PhD in Computer Science — Oct 2020 – Sept 2025 (expected)

- Research focus: Model Merging, Multi-Task Learning and Pareto Front Learning
- Advisors: François Fleuret & Pascal Frossard

National Technical University of Athens (NTUA) — Athens, Greece
BSc & MSc in Electrical and Computer Engineering — Sept 2014 – Sept 2020

- Thesis: "Tropical Geometry and Applications in Machine Learning and Optimization"
- Advisor: Petros Maragos

PROFESSIONAL EXPERIENCE

Google DeepMind — Zurich, Switzerland / Remote
Student Researcher — Dec 2023 – Dec 2024

- Conducted research on text-to-image generative models
- On site and full-time Dec 2023 - Feb 2024, remote and part-time Mar - Dec

École Polytechnique Fédérale de Lausanne (EPFL) — Lausanne, Switzerland
Doctoral Assistant — Oct 2020 – Sept 2025 (expected)

- Specialized in Multi-Task Learning with a focus on Pareto Front Learning and model merging. My research led to state-of-the-art methodologies for efficient and continuous parametrization of the Pareto Front, and provided insights to improve the compression and downstream performance when merging large pre-trained models post training.

PUBLICATIONS

[1] Garcia Giraldo, **Dimitriadis**, Wang, Frossard: *Single-Input Multi-Output Model Merging: Leveraging Foundation Models for Dense Multi-Task Learning . Under review* (2025) paper link

[2] Wang*, **Dimitriadis***, Favero, Ortiz-Jimenez, Fleuret, Frossard: *LiNeS: Post-training Layer Scaling Prevents Forgetting and Enhances Model Merging*. ICLR (2025) paper link paper website

[3] **Dimitriadis**, Frossard, Fleuret: *Pareto Low-Rank Adapters: Efficient Multi-Task Learning with Preferences*. ICLR (2025) paper link

[4] Wang*, **Dimitriadis***, Ortiz-Jimenez, Fleuret, Frossard: *Localizing Task Information for Improved Model Merging and Compression*. ICML (2024) paper link paper website

[5] Matoba, **Dimitriadis**, Fleuret: *Benefits of Max Pooling in Neural Networks: Theoretical and Experimental Evidence*. TMLR (2023) paper link

[6] Yüzügüler, **Dimitriadis**, Frossard: *Flexible Channel Dimensions for Differentiable Architecture Search*. Preprint (2023) paper link

[7] **Dimitriadis**, Frossard, Fleuret: *Pareto Manifold Learning: Tackling Multiple Tasks via Ensembles of Single-Task Models*. ICML (2023) paper link

[8] **Dimitriadis**, Fleuret, Frossard: *SequeL: A Continual Learning Library in PyTorch and JAX*. CVPR Workshop on Continual Learning (2023) paper link website

[9] Yüzügüler, **Dimitriadis**, Frossard: *U-Boost NAS: Utilization-Boosted Differentiable Neural Architecture Search*. ECCV (2022) paper link

[10] **Dimitriadis**, Maragos: *Advances in Morphological Neural Networks: Training, Pruning and Enforcing Shape Constraints*. ICASSP (2021) paper link

[11] **Dimitriadis**, Maragos: *Advances in the training, pruning and enforcement of shape constraints of Morphological Neural Networks using Tropical Algebra*. ArXiv (2020) paper link

AWARDS

- **SNF/ACG Study Abroad Program Scholarship** — Jul 2019
  Awarded for summer school studies at the Imperial College Business School by Stavros Niarchos Foundation (SNF) and American College of Greece (ACG).
- **ACG Merit Scholarship & SNF Scholarship** — Sept 2018 - Jun 2020
  Dual scholarship for parallel studies at the American College of Greece.
- **Right to Virtuosity Distinction** — Jun 2018
  Awarded for extraordinary performance at the Classical Guitar Degree examinations of the National Conservatory of Greece.
- **Classical Guitar Degree** — Jun 2018
  Achieved after twelve years of studies at the National Conservatory of Greece.
- **"The Great Moment for Education" Eurobank EFG Scholarship** — Oct 2014
  Achieved the highest score at the national exams among students of "Ecole Franco-Héllenique Saint Joseph".
- **Sœur Sébastienne Scholarship** — Oct 2007 - Jun 2014
  Full academic scholarship for Junior High and High School at "Ecole Franco-Héllenique Saint Joseph".

TEACHING

- Courses: Deep Learning, Fundamentals of inference and learning, Probability and Statistics
- Co-advised multiple MSc theses with Swisscom and multiple MSc semester projects

SKILLS

Python | Git | PyTorch | JAX | Docker

LANGUAGES

English (fluent), **French** (intermediate), **Greek** (native)