Davide Adamo

PhD candidate in Applied Mathematics
Univeristè Côte d'Azur · UMR7264 CEPAM · Inria
Based in Nice (FR)

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Profile

I am a PhD candidate in Applied Mathematics at the University of Côte d'Azur, supervised by Marco Corneli, Emmanuelle Vila, and Manon Vuillien.

My research bridges machine and deep learning with comparative anatomy to solve complex bioarchaeological problems, with a specific focus on the 3D analysis of faunal remains. With a foundational background in mathematics, my core research interests lie at the intersection of statistical inference, geometric learning (Topological Data Analysis), and optimal transport (OT). I actively study and advance the Procrustes-Wasserstein distance to learn geometrically meaningful matchings, transport maps, and barycenters by incorporating geometric invariances, such as isometries, into classical OT formulations. I am passionate about how this theoretical foundation naturally connects to geometric and generative approaches in modern ML/DL research.

Education

- **3iA Côte d'Azur · CNRS · Inria** *2023*
  PhD candidate in Applied Mathematics Nice (FR)
  AI for archaeozoology: learning methods to identify and cluster faunal remains,
  under the supervision of Marco Corneli, Emmanuelle Vila and Manon Vuillien

- **University of Verona** *2020-23*
  Master's degree in Applied Mathematics Verona (IT)
  Thesis: *A Topological Data Analysis approach to classification of archaeozoological bones*

- **University of Verona** *2017-20*
  Bachelor's degree in Economic & Financial Mathematics Verona (IT)
  Thesis: *Algoritmi per la risoluzione di FBSDEs basati sul Deep Learning*

Professional Experience

- **CNRS · UMR7264 CEPAM** *2023*
  Research Engineer Nice (FR)
  Development and testing of modern machine/deep learning approaches for archaeological research challenges.
  Introduction of 3D geometric DL approaches, such as PointNet++, in archaeozoological context.

- **Inria** *2022*
  Master Internship Sophia Antipolis (FR)
  Development of topology based descriptors for 3D scan of modern and archaeological bones.
  I became familiar with Topological Data Analysis and computational homology notions.

- **Accademia d'Arte Circense** *2020-22*
  Academic Tutor Verona (IT)
  Didactic support high/middle school for artists-students living in the academy. Daily supervision of school progress and management of school-family relationship.

Research Activity

PUBLICATIONS

- **D. Adamo**, M. Corneli, M. Vuillien and E. Vila. *Neural approximation of Procrustes-Wasserstein transport maps.* (Submitted - Preprint 2026)
- **D. Adamo**, M. Vuillien, E. Vila and M. Corneli. *Rethinking Multiple Kernel Learning under the lenses of Importance Weighted Monte Carlo Variational Inference.* (Submitted - Preprint 2025)
- **D. Adamo**, M. Corneli, M. Vuillien and E. Vila. *An in depth look at the Procrustes–Wasserstein distance: properties and barycenters.* In International Conference on Machine Learning (ICML 2025)
- M. Vuillien, **D. Adamo**, E. Vila, A. Agraw, T. Argant, D. Helmer, M. Mashkour, A. Moussous, O. Notter, E. Rossoni-Notter, I. Théry and M. Corneli. *Topological data analysis and multiple kernel learning for species identification of modern and archaeological small ruminants.* In Journal of Computer Applications in Archaeology (JCAA 2025)

TALKS & POSTERS

- 2025 (November): *Archaeozoology & Machine Learning: a promising matching*, Invited speaker at the 10èmes Rencontres de Statistique de l'UBS - Science des données, Histoire & Territoires (Vannes, France)
- 2025 (November - poster): *An in depth look at the Procrustes-Wasserstein distance: properties and barycenters*, SophIA Summit 2025 (Nice, France)
- 2025 (July- poster): *An in depth look at the Procrustes-Wasserstein distance: properties and barycenters*, ICML 2025 (Vancouver, Canada)

- 2025 (June): *An in depth look at the Procrustes-Wasserstein distance: properties and barycenters*, 56ièmes Journées de Statistique de la SFdS (Marseille, France)
- 2025 (May): *Optimal transport for tracking the morphological evolution of small ruminants*, Colloque des Doctorants de 2ème année de l'EDSFA (Nice, France)
- 2025 (May): *Tracking the morphological evolution of small ruminants through Wasserstein barycenters*, International Conference on Computer Application in Archaeology (Nice, France)
- 2025 (February): *Rethinking Multiple Kernel Learning under the lenses of Importance Weighted Monte Carlo Variational Inference*, Long talk at 3IA monthly seminar (Nice, France)
- 2024 (November - poster): *Rethinking Multiple Kernel Learning under the lenses of Importance Weighted Monte Carlo Variational Inference*, SophIA Summit 2024 (Nice, France)
- 2024 (May): *Rethinking Multiple Kernel Learning under the lenses of Importance Weighted Monte Carlo Variational Inference*, 55ièmes Journées de Statistique de la SFdS (Bordeaux, France)
- 2023 (November): *Astragalus bones identification via topological data analysis*, 1st International Conference on artificIAl Intelligence and applied MAthematics for History and Archaeology (IAMAHA) (Nice, France)

SUMMER SCHOOLS

- (2025) Generative Modeling Summer School (GEMSS) / Statlearn, in Nice, France
- (2024) Generative Modeling Summer School (GEMSS) in Eindhoven, Netherlands

OTHER ACTIVITY

- Reviewer for ICML 2026 (Seoul, South Korea)

Technical Skills

Programming languages: Python, Matlab, R, C, C++
Frameworks: Pytorch, Tensorflow, Keras

Languages

Italian: Native
English: C1 level
French: C1 level
German: A2 level