Yacoub Hendi

Curriculum Vitae

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Research Interests

My research explores the intersection of machine learning and geometry. On one hand, I apply machine learning techniques to compute numerical approximations on manifolds such as Ricci flat metrics on a Calabi-Yau manifolds. On the other hand, I study the geometric properties of neural networks to better understand their efficiency.

Education

2023- Ph.D. studies in mathematics at Uppsala University, Uppsala, Sweden.
Advisor: Prof. Magdalena Larfors.

2021-2023 Master of Mathematics at Uppsala University.
Master Thesis: *Computation of the superpotential for monotone Lagrangian submanifolds in products of complex projective lines*.
Advisor: Assoc. Prof. Luis Diogo.

2018-2021 Bachelor of Mathematics at Uppsala University.
Thesis: *On The Prime Number Theorem*.
Advisor: Prof. Andreas Strömbergsson

2018-2021 Bachelor of Computer Science at Uppsala University.
Thesis: *Parameterized Verification under The Total Store Order Memory Model is EXPTIME-Complete*.
Advisor: Prof. Parosh Abdulla

Workshops and summer schools

2024 June GeUmetric Deep Learning Workshop in Umeå.
Presentation: Learning Group Invariant CY Metrics.

2025 July London Geometric Machine Learning Workshop (LOGML) in London.
Project: Learning the Graphical Nature of Symmetries.

2025 August GeUmetric Deep Learning Workshop in Umeå.

2025 August Summer school at Rényi Institute in Budapest: Invitation to Complex Geometry.
Talk: Approximating Ricci-Flat Metrics on Calabi–Yau Manifolds with Neural Networks.

2025 August Summer school at Rényi Institute in Budapest: on Singular Kählerian Metrics and Hermitian Geometry.

Publications

2025 Y. Hendi, M. Larfors, and M. Walden. Learning group invariant Calabi–Yau metrics by fundamental domain projections. Machine Learning: Science and Technology, 6(1):015050, feb 2025

2023 Abdulla, P.A. et al. (2023). Parameterized Verification under TSO with Data Types. In: Sankaranarayanan, S., Sharygina, N. (eds) Tools and Algorithms for the Construction and Analysis of Systems. TACAS 2023. Lecture Notes in Computer Science, vol 13993. Springer, Cham. https://doi.org/10.1007/978-3-031-30823-9_30