David Chemaly

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PROFILE

Experienced Quantitative Researcher with a robust foundation in astrophysics, statistics, and machine learning. Skilled at utilizing advanced data analysis techniques to unravel complex scientific questions. Over 500 hours of teaching, underscoring a proficiency in breaking down intricate concepts. Eager to apply a unique interdisciplinary approach to pioneer innovative big data-driven discoveries.

EDUCATION

University of Cambridge   Cambridge, United Kingdom
PhD in Astronomy   2023 - 2026
Thesis subject: Stellar Stream and Machine Learning: Constraining Dark Matter

University of Montreal   Montreal, Canada
M. Sc. in Astrophysics (GPA: 4.3/4.3)   2021 - 2023
Thesis subject: Leveraging Machine Learning to Measure the Mass of Supermassive Black Holes

University of Montreal   Montreal, Canada
B. Sc. in Physics (GPA: 4.2/4.3)   2018 - 2021

RELEVANT EXPERIENCES

University of Cambridge   **Cambridge, United Kingdom**
Machine Learning based Automatic Discovery and Classifications of Low Surface Brightness features
- Fine-tuned a foundation model to enable scientific discoveries in the Low Surface Brightness regime
- Accelerated the analysis process of over 4TB of whole sky survey by several order of magnitude

Constraining Dark Matter Halo Properties through Hierarchical Bayesian Inference
- Developed a Bayesian inference framework to uncover dark matter characteristics at a population level
- Optimized the data analysis pipeline for high-frequency astronomical data

University of Montreal   **Montreal, Canada**
Uncovering Correlation Between Galaxy Morphology and Supermassive Black Hole Mass
- Implemented a score-based diffusion model to process and analyse high dimensional data
- Addressed a dataset of over 100,000 galaxy images with high dynamical range requiring complex pre-processing

Teacher's Assistant
- Spearheaded teaching assistant responsibilities for 9 courses, accumulating over 500 hours of academic support
- Guided and co-ordinated over 250 students through course materials, assignments, and exam preparations

AWARDS AND ACHIEVEMENTS

- **Harding Distinguished Postgraduate Scholarship 2023-2026 – 70,000£/year**
  Private scholarship awarded for exceptional research potential in quantitative science programs.
- **Doctoral Training Partnership 2023-2026 – 60,000£/year**
  A prestigious excellence scholarship from UK Research and Innovation for PhD. (Declined)
- **Fellowship at the Institute for Data Valorization 2022-2024 – 20,000$/year**
  Private M.Sc. Research Fellowship for big data driven analysis.
- **Scholarship awarded by the Research Council of Canada 2021-2022 – 17,500$**
  Federal M.Sc. scholarship recognizing outstanding research capabilities.
- **Quebec Research fonds in Nature and Technologies 2021-2023, FRQNT – 35,000$ over 2 years**
  Provincial M. Sc. Research Scholarship

SKILLS AND INTERESTS

Technical: Python, MATLAB, PyTorch, Lightning, HuggingFace, TensorFlow, Keras
Languages: English, French, Arabic
Interests: Chess, Competitive Rowing