

Education

- Ph.D. in Physics**, Massachusetts Institute of Technology 2019 – present
Advisor: Lina Necib
Thesis: “Decoding dark matter halos through the lens of machine learning”
- B.S. in Physics & Astronomy**, University of Rochester 2015 – 2019
Magna Cum Laude with the highest distinction in Physics

Research Positions

- Graduate Research Assistant**, MIT Local Universe Group Sep 2021 – present
Advisor: Lina Necib
Thesis: “Decoding dark matter halos through the lens of machine learning”
- Research Analyst**, Center for Computational Astrophysics Sep 2022 – Jan 2023
Advisor: Rachel Somerville, Chirag Modi
Project: “Generating dark matter merger trees with generative models”
- Graduate Research Assistant**, MIT LIGO Laboratory Jun 2019 – Sep 2021
Advisor: Erik Katsavounidis, Phillip Harris
Project: “Detecting gravitational waves from binary mergers with machine learning”
- Undergraduate Research Assistant**, University of Rochester Sep 2016 – Jun 2019
Advisor: Segev BenZvi, Regina Demina
Thesis: “Efficiently calculating the galaxy two-point correlations using K-D tree”

Honors and Awards

- Graduate Service Award**, Massachusetts Institute of Technology 2023
- CCA Pre-Doctoral Program**, Center for Computational Astrophysics, Flatiron Institute 2022
- Dean’s List Recognition**, University of Rochester 2015 – 2019
- Rush Rhees Scholarship**, University of Rochester 2015 – 2019
- LIGO SURF Fellowship Program**, California Institute of Technology 2018

Publications

Led/Co-led/Major Contributions

- [7] M. Huang, **T. Nguyen**, X. Ou, K. Brauer, L. Necib In prep.
Using Graph Neural Network and Spectral Clustering to find Stellar Substructures
- [6] H. Su, **T. Nguyen**, N. Shipp, X. Ou, L. Necib In prep.
Using Machine Learning to Catalog Accreted Stars in Gaia DR3
- [5] L. Y. A. Yung, R. S. Somerville, **T. Nguyen**, C. Modi, J. Gardner In prep.
The GUREFT simulations – Dark matter halo demographics and assembly histories at ultrahigh redshift

- [4] **T. Nguyen**, C. Modi, L. Y. A. Yung, R. S. Somerville
FLORAH: A generative model for assembly histories of halos
Submitted to MNRAS
arXiv:2308.05145
- [3] **T. Nguyen**, X. Ou, N. Panithanpaisal, N. Shipp, L. Necib,
R. Sanderson, A. Wetzel
Synthetic Gaia DR3 surveys from the FIRE cosmological simulations of
Milky-Way-mass galaxies
Submitted to ApJ
arXiv:2306.16475
- [2] **T. Nguyen**, S. Mishra-Sharma, R. Williams, L. Necib
Uncovering the dark matter density profiles of dwarf galaxies with graph
neural networks
Phys.Rev.D **107**, 043015
arXiv:2208.12825
- [1] R. Ormiston, **T. Nguyen**, M. Coughlin, R. Adhikari, E. Katsavounidis
Noise reduction in gravitational-wave data via deep learning
Phys.Rev.Res. **2**, 033066
arXiv:2005.06534

N-th Author Papers & Collaboration Papers

- [3] M. Choleyil et al. (including **T. Nguyen**)
Demonstration of Machine Learning-assisted real-time noise regression
in gravitational wave detectors
Submitted to PNAS
arXiv:2306.11366
- [2] The LIGO-Virgo-KAGRA collaboration (including **T. Nguyen**)
GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo
During the Second Part of the Third Observing Run
Phys.Rev.X
arXiv:2111.03606
- [1] A. Gunny, D. Rankin, J. Krupa, M. Saleem, **T. Nguyen**, M. Coughlin,
P. Harris, E. Katsavounidis, S. Timm, B. Holzman
Hardware-accelerated Inference for Real-Time Gravitational-Wave
Astronomy
Nat Astron **6**, 529–536
arXiv:2108.12430

White Papers & Conference Proceedings

- [3] A. Deiana et al. (including **T. Nguyen**)
Applications and Techniques for Fast Machine Learning in Science
Front. Big Data **2022**.787421
arXiv:2110.13041
- [2] E. Cuoco et al. (including **T. Nguyen**)
Enhancing Gravitational-Wave Science with Machine Learning
Mach. Learn.:Sci.Tech. **2**, 011002
arXiv:2005.03745
- [1] S. BenZvi, R. Cross, **T. Nguyen**
Estimating the Sensitivity of IceCube to Signatures of Axion Production
in a Galactic Supernova
Int. Cosmic Ray Conf. **2017**
arXiv:1710.01201

Invited Talks

- [2] Galaxy Formation and Evolution in the Data Science Era, KITP, CA, USA
Mar 2023
- [1] NCSA Accelerated Artificial Intelligence for Big-Data Experiments Conference, Remote
Oct 2020

Contributed Talks

- [8] Galactic Frontiers: Dwarf Galaxies in the Local Volume and Beyond, Center for Computational
Astrophysics, NY, USA
Jul 2023
- [7] Statistical Challenges in Modern Astronomy VIII, Penn State University, PA, USA
Jun 2023
- [6] Cosmic Connections: A ML X Astrophysics Symposium, Center for Computational
Astrophysics, NY, USA
May 2023

- [5] 241st AAS Winter Meeting, Seattle, WA, USA Jan 2023
- [4] ML4Astro Workshop, International Conference on Machine Learning, Baltimore, MD, USA Jul 2022
- [3] IAIFI–AIMLAC Lightning Talk, Massachusetts Institute of Technology, MA, USA Mar 2022
- [2] Fast Machine Learning Workshop, Fermilab, IL, USA Sep 2019
- [1] 233rd AAS Winter Meeting, Seattle, WA, USA Jan 2019

————— Seminars & Poster Presentations

- [7] ML4Astro Workshop Poster, International Conference on Machine Learning, Honolulu, HI, USA Jul 2023
- [6] Lunch Talk, Center for Computational Astrophysics, New York, NY, USA Dec 2022
- [5] Blackboard Lunch Talk, Columbia University, New York, NY, USA Nov 2022
- [4] Galaxy Formation Meeting, Center for Computational Astrophysics, New York, NY, USA Nov 2022
- [3] Nature of Dark Matter on Small Scales Seminar, Remote Oct 2022
- [2] LIGO–Virgo–KAGRA Public Webinar, Remote Dec 2021
- [1] AI in Astronomy, University of São Paulo, Remote Sep 2021

————— Mentoring and Advising

- Hanna Chen**, MIT Undergraduate Research Opportunities Program, Jun 2023 – present
Project: “Accreted Kinematic Structures in Gaia DR3”
- Hang Su**, MIT Summer Research Program Jun 2022 – present
Project: “Using Machine Learning to Catalog Accreted Stars in Gaia ESA DR3”
- Michael Huang**, Research Science Institute Program Jul 2022 – present
Project: “Automating Stellar Substructure Detection using Supervised Neural Clustering”
- Anna V Orgel**, MIT Undergraduate Research Opportunities Program Jun 2023 – Aug 2023
Project: “Building a Generative Model of Self-Interacting Dark Matter Dwarf Galaxies”

————— Teaching Positions

Massachusetts Institute of Technology

- 8.022 Physics II Spring 2022
- 8.01L Physics I Fall 2021
- 8.S50 Computational Data Science in Physics Jan 2020, Jan 2021

University of Rochester

- PHY 235 Classical Mechanics Fall 2018
- PHY 121 Mechanics Lab Spring 2017, Spring 2018
- AST 111 The Solar System & Its Origin Fall 2017
- PHY 113 Mechanics Lab Fall 2016

————— Leadership Positions

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| Organizer , Astronomy on Tap Boston | 2022 – present |
| Organizer , MIT Astrogazers Club | 2022 – present |
| Committee Member , IAIFI Public Engagement Committee | 2021 – present |
| Committee Member , MIT Physics Graduate Council Social Committee | 2019 – 2020 |
| President , The Kapitza Society for Theoretical Physics | 2018 – 2019 |
| Dance Instructor , University of Rochester Breakdance Club | 2017 – 2019 |
| Tour Guide , C.E.K Mees Observatory | Summer 2017, Summer 2018 |
| Vice President , University of Rochester Astronomy Club | 2017 – 2018 |

Science Communication & Public Engagement

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| Organizer , Astronomy on Tap | Aug 2023 |
| Panelist , IAIFI Career Panel | Oct 2023 |
| Volunteer , Accenture's Learning to Lead program, Accenture Boston | Jul 2023 |
| Volunteer , Teen Programming Council Event @ MIT Museum | May 2023 |
| Volunteer , After Dark @ MIT Museum | May 2023 |
| Panelist , MIT Physics Graduate Student Council Internship Panel | Apr 2023 |
| Volunteer , AAS 241st Graduate School Fair | Jan 2023 |
| Volunteer , Cambridge Science Festival 2022 | Oct 2022 |
| Lecturer , Gaia DR3 Hackathon | Jun 2022 |
| Volunteer , Solar Telescope for Middle Schoolers | Jul 2019 |
| Organizer , Earth Hour @ University of Rochester | Mar 2018 |

Service

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| Reviewer , Physics Review D | 2021 – present |
| Reviewer , Physics Review Letter | 2021 – present |
| Reviewer , Astronomy and Computing | 2021 – present |
| Reviewer , ML for Astrophysics workshop at ICML 2023 | Jun 2023 |
| Reviewer , ML for Physical Sciences workshop at NeurIPS 2022 | Oct 2022 |