CHAYAN CHATTERJEE

CONTACT DETAILS

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CURRENT POSITION

A.I. for New Messengers Postdoctoral Research Fellow December 2023 - present

Joint appointment with the Department of Physics and Astronomy and The Data Science Institute, Vanderbilt University, United States of America.

EDUCATION

- **Doctor of Philosophy in Physics** February 2020 - November 2023
  The University of Western Australia, Australia
  Thesis title: Enabling rapid discovery of gravitational waves using machine learning.
  Supervisors: Prof. Linqing Wen, Prof. Amitava Datta.

- **Master of Science in Physics** 2016 - 2018
  Presidency University, Kolkata, India
  Specialization: Astrophysics and Cosmology
  Thesis: Dark matter self interaction and its impact on large scale structures.
  List of Courses: http://www.presiuniv.ac.in/web/Physics_MSc.pdf

- **Bachelor of Science (Hons) in Physics** 2013 - 2016
  Presidency University, Kolkata
  Thesis: The Hertzsprung-Russell diagram of stars in the SDSS Stripe-82 Catalog.
  List of Courses: http://www.presiuniv.ac.in/web/Physics_BSc_Major.pdf

PUBLICATIONS

Citations from Google Scholar

1. *"Pretrained Audio Transformer as a Foundational AI Tool for Gravitational Waves"* - Chayan Chatterjee *et al* (2024) [ArXiv:2412.20789].
2. *"No Glitch in the Matrix: Robust Reconstruction of Gravitational Wave Signals Under Noise Artifacts"* - Chayan Chatterjee and Karan Jani (2024)[Astrophys. J, 982 102].
3. *"Navigating Unknowns: Deep Learning Robustness for Gravitational Wave Signal Reconstruction"* - Chayan Chatterjee and Karan Jani (2024)[Astrophys. J, 973 112] - *Citations: 2.*
4. *"Reconstruction of binary black hole harmonics in LIGO using deep learning"* - Chayan Chatterjee and Karan Jani (2024) [Astrophys. J, 969 25] - *Citations: 3.*
5. *"Pre-merger sky localization of gravitational waves from binary neutron star mergers using deep learning"* - Chayan Chatterjee and Linqing Wen (2023) [Astrophys. J, 959 76] - *Citations: 16.*

6. *"Rapid localization of gravitational wave sources from compact binary coalescences using deep learning"* - Chayan Chatterjee, Linqing Wen, Damon Beveridge, Foivos Diakogiannis, Kevin Vinsen (2023) [Astrophys. J, 959 42] - *Citations: 20.*

7. *"Rapid mass parameter estimation of binary black hole coalescences using deep learning"* - Alistair McLeod, Daniel Jacobs, Chayan Chatterjee, Linqing Wen, and Fiona Panther (2022). [ArXiv:2201.11126] - *Under review in Physical Review D.*

8. *"Extraction of binary black hole gravitational wave signals from detector data using deep learning"* - Chayan Chatterjee, Linqing Wen, Foivos Diakogiannis, Kevin Vinsen (2021) [Phys. Rev. D 104, 064046] - *Citations: 51.*

9. *"Enhancing gravitational-wave science with machine learning"* - Elena Cuoco et al. (2020) [2021 Mach. Learn.: Sci. Technol. 2 011002] - *Citations: 218.*

10. *"Using deep learning to localize gravitational wave sources"* - Chayan Chatterjee, Linqing Wen, Kevin Vinsen, Manoj Kovalam, Amitava Datta (2019) [Phys. Rev. D 100, 103025] - *Citations: 53.*

SCHOLARSHIPS AND AWARDS

1. **A.I. for New Messengers Postdoctoral Fellowship 2023** - *Postdoctoral Fellowship by Vanderbilt University (2023-2026).*

2. **UWA Postgraduate Student Association Travel Award** - *for international academic visits and conference participation (2023).*

3. **OzGrav Travel Award** - *for international academic visits and conference participation (2022).*

4. **UWA Postgraduate Student Association Research Week Best Talk Award** - *Runner-Up (2022).*

5. **J-P Macquart Best Student Talk Award - The Australian National Institute for Theoretical Astrophysics Conference** - *Runner-Up (2022)* and *Winner (2021).*

6. **Australian Mathematical Sciences Institute Summer School - Best Student Talk Award** - *Winner (2022).*

7. **OzGrav Outreach Superstar Award (UWA)** - *Winner (2021).*

8. **The University of Western Australia Three Minute Thesis (3MT) Competition Award** - *Winner (2020)* and **People's Choice Award** - *Winner (2020).*

9. **Scholarship for International Research Fees and International Living Allowance Scholarship for 2020** - Awarded by The University of Western Australia.

COMMITTEE AND ACADEMIC SERVICES

1. **Journal Referee** - *The Astrophysical Journal Letters, International Journal of Modern Physics D, Astrophysics and Space Science, Science China Physics, Mechanics and Astronomy.*

2. **Program Chair** - Gravitational Wave Inference Research Program, OzGrav - ARC Center of Excellence for Gravitational Wave Discovery (2023).

3. **Committee Member** - Australian National Institute for Theoretical Astrophysics (2021 - 2022).

4. **Early Career Researcher Representative** - OzGrav, University of Western Australia (2021 - 2022).

5. **Postgraduate Student Research Representative** - Postgraduate Student Association, University of Western Australia Student Guild (2020 - 2021).

6. **Co-judge** - *Visualize Your Thesis Competition, The University of Western Australia (2024).*
7. **Mentor and Organizer of NASA Space Apps Challenge, Perth** (2021).
8. **Co-ordinator of Presidency University Physics League** - Official Physics club run by students of the Department of Physics, Presidency University (2015 - 2017).

TEACHING/SUPERVISION

1. **Research Supervision** - Thesis advisor for several PhD, Masters and undergraduate students. 2020 - present.
2. **Lecturer** - Black Holes in Our Universe (ASTR-2190), Vanderbilt University. 2024- present.
3. **Lecturer** - Gravitational Wave Astronomy (PHYS4420), University of Western Australia. 2022-2023
4. **Teaching Facilitator** - Our Universe (SCIE1121), University of Western Australia. 2020 - 2023.

SELECTED INVITED TALKS

1. *"Towards A Foundational AI Model for Gravitational Wave Data Analysis"*
   The University of Western Australia - Physics seminar talk April, 2025.
2. *"Decoding the Cosmic Orchestra: Reconstruction and Parameter Estimation of Gravitational Waves Using Deep Learning"*
   University of Glasgow, Scotland - IGA seminar talk May, 2024.
3. *"Rapid Sky Localization and Waveform Extraction of Gravitational Waves Using Deep Learning"*
   Vanderbilt University, USA - Department of Physics and Astronomy seminar talk February, 2023.
4. *"Rapid Sky Localization and Waveform Extraction of Gravitational Waves Using Deep Learning"*
   Monash University, Australia - Gravitational Wave Astronomy group seminar talk March, 2023.

SELECTED INTERNATIONAL CONFERENCE PRESENTATIONS

1. Oral presentation, *"Towards A Foundational AI Model for Gravitational Wave Data Analysis"* at LIGO-Virgo-KAGRA meeting, Australia March, 2025.
2. Oral presentation, *"Decoding the Cosmic Orchestra: Reconstruction of Binary Black Hole Harmonics in LIGO Using Deep Learning"* at APS Global Physics Summit, USA March, 2025.
3. Oral presentation, *"Navigating Unknowns: Deep Learning Robustness for Gravitational Wave Signal Reconstruction"* at LIGO-Virgo-KAGRA meeting (online) September, 2024.
4. Oral presentation, *"Reconstruction of Binary Black Hole Harmomics in LIGO Using Deep Learning"* at LIGO-Virgo-KAGRA meeting, USA March, 2024.

SELECTED OUTREACH ACTIVITIES AND MEDIA RELEASES

1. Featured research news article from Vanderbilt University (2024).
2. Invited guest at talk show - *Curiosity Killed the Rat* (2021)
3. Invited guest at podcast - *Astrophiz: An Astronomy Podcast* (2021)
4. Invited guest at science talk show - *The Uncertainty Principle Presents: Science After Dark* - Perth Fringe Festival (2021).
5. Featured article - *"Algorithms now helping find Gravitational Wave sources"* - Space Australia (2019).