

NSF HDR ML Challenge



Data Science Institute
UNIVERSITY OF WISCONSIN-MADISON



Who is the NSF HDR?



The National Science Foundation (NSF) Harnessing the Data Revolution (HDR) Institutes are an integrated fabric of interrelated institutes that aim to accelerate discovery and innovation in multiple areas of data-intensive science and engineering.





NSF HDR ML Challenge



Scientific discovery often involves finding an inconsistent pattern within our data. Data that behaves differently from what is expected can indicate that the underlying science is different. Depending on the scientific domain, a new, unpredictable object/event could have a profound impact.

This could be the discovery of a new astrophysical object 🌌, the observation of unusual climate behavior 🌩️, or the discovery of a new species 🦋.





3 Challenges



- Discovering hybrid butterfly species through pattern recognition in image datasets.
- Finding unmodeled gravitational wave events, such as potential supernovae, in detector data.
- Identifying unusual fluctuations in water levels that do not correspond to known environmental factors or historical data patterns.





Deadline and Prizes!



- **Deadline:** January 16, 2025 @ 6 pm CST
- **Prizes:**
 - 💰 Total cash prizes \$3000
 - 🧑💻 \$3000 in AWS cloud computing credits
 - 🏆 Extra award sponsored by AMD (details pending)
 - 🏆 Funded Invitation to AAAI 2025 (5 Members of the Winning Team)



Structure for Today's Events



- Introduction to the HDR Challenge
- Guest Speaker: Introduction to Anomaly Detection
- Description of the Challenge Problems
- Pizza and Discussion Break (~ 12 pm)
- Walkthrough of Codabench
- Hands-on Work Time

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Acknowledgements



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