

## Hayden McTavish

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### Education/ Academic Achievement

#### Duke University

PhD Student in Computer Science

**2023 – present**

(GPA: 4.0/4.0)

#### University of California, San Diego

MS in Computer Science and Engineering

**2021 – 2023**

(GPA: 4.0/4.0)

#### University of British Columbia

BS in Computer Science and Statistics

**2016 – 2021**

(GPA: 4.0/4.0)

### Relevant Experience:

- **Graduate Student Researcher** **August 2023 – Present**  
Duke University
  - o Led multiple research projects on interpretable machine learning for missing data through completion and acceptance to top venues, Neurips '24 and ICML '25.
  - o Designed novel algorithms for decision tree optimization to find interpretable, glass box models as accurate as boosted ensembles in just a few seconds.
- **Graduate Student Researcher** **September 2021 – August 2023**  
University of California, San Diego
  - o Collected, analyzed, and documented data from 8 courses and 1600 students, sourcing from the university registrar, a survey, and two different course discussion platforms.
  - o Designed, led, and published an intersectional analysis of engagement and anonymity in online course discussion forums.
  - o Innovated a novel, efficient algorithm for aggregating human preferences.
- **Research Assistant** **May 2019 – February 2021**  
University of British Columbia
  - o Led a research investigation on interpretable machine learning, from initial concepts to accepted publication, by closely collaborating with a large multi-institutional team.
  - o Proved bounds for a novel approach to decision tree optimization
  - o Designed and implemented a scalability improvement to a state-of-the-art method for finding Bayesian coresets, weighted subsets of data for fast and accurate inference.

### Selected Publications

- [Leveraging Predictive Equivalence in Decision Trees](#). ICML, 2025. Hayden McTavish\*, Zachery Boner\*, Jon Donnelly\*, Margo Seltzer, Cynthia Rudin.
- [Near-Optimal Decision Trees in a SPLIT Second](#), ICML, 2025. **Spotlight**. Varun Babbar\*, Hayden McTavish\*, Margo Seltzer, Cynthia Rudin.
- [Fast Sparse Decision Tree Optimization via Reference Ensembles](#), AAI, 2022. ([video teaser](#)) | ([talk](#)) | ([code](#)) | Hayden McTavish\*, Chudi Zhong\*, Reto Achermann, Ilias Karimalis, Jacques Chen, Cynthia Rudin, Margo Seltzer.
- [Interpretable Generalized Additive Models for Datasets with Missing Values](#), Neurips, 2024. ([video](#)) | Hayden McTavish\*, Jon Donnelly\*, Margo Seltzer, Cynthia Rudin.
- [Rashomon Sets for Prototypical-Part Networks: Editing Interpretable Models in Real-Time](#), CVPR, 2025. Jon Donnelly, Zhicheng Guo, Alina Jade Barnett, Hayden McTavish, Chaofan Chen, Cynthia Rudin.

- [Selective Preference Aggregation](#), ICML, 2025. Shreyas Kadekodi\*, Hayden McTavish\*, Berk Ustun.
- [Engagement and Anonymity in Online Computer Science Course Forums](#), ICER, 2023. ([slides](#)) | Mrinal Sharma\*, Hayden McTavish\*, Zimo Peng, Anshul Shah, Vardhan Agarwal, Caroline Sih, Emma Hogan, Ismael Villegas Molina, Adalbert Gerald Soosai Raj, Kristen Vaccaro.

\*co-first authors

### Honors & Awards

- 2024 Duke Research Initiation Project award (given to the top two students presenting original research at Duke's version of a qualifying examination)
- 2023 Cultural Competency in Computing (3C) fellow – two-year international professional development program tackling systemic bias in AI and academia.
- 2021 Award for Academic Excellence in Computer Science (given to the top graduating student of the Combined Major in Computer Science and Statistics)
- 2019 NSERC Undergraduate Student Research Award
- 2019 Dr. John and Barbara PETKAU scholarship (given to the top 3<sup>rd</sup> year UBC student in a statistics-related major)
- 2020 UBC Charles and Jane Banks Scholarship (institutional academic merit award)
- 2019 UBC Greer Family Scholarship (institutional academic merit award)
- 2019 UBC Shirley Snelgrove & John Yule scholarship (institutional academic merit award)
- 2018 UBC Marie Kendall Memorial Scholarship in Science (institutional academic merit award)
- 2018, 2020 UBC Computer Science Scholarship (institutional academic merit award)
- 2018, 2019, 2020 Trek Excellence Scholarship for Continuing Students (award for top 5% of continuing UBC students)
- 2017, 2018 UBC David Shum Memorial Prize in Computer Science (institutional academic merit award)
- 2013 Pokémon Scholarship (award for winning the Senior Division Video Game World Championships)

### Teaching Experience:

- **Teaching Assistant** **September 2022 – June 2023**  
University of California, San Diego
  - o Led a tutorial guiding students to develop AI solutions for 2048, leveraging my experience in search and optimization.
  - o Facilitated discussions on fairness and ethics of algorithm policies and social computing.
  - o Maintained, evaluated, and encrypted proofs for applied cryptography
- **Teaching Assistant** **September 2018 – April 2020**  
University of British Columbia
  - o Clearly communicated statistics and data science concepts to non-experts while running tutorials, labs, and office hours for students in introductory courses.
  - o Fostered effective and welcoming learning environments for statistics by placing an emphasis on sharing my own enthusiasm for the subject, and regularly encouraging questions from my students.