Hadas Barabash

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EDUCATION & AWARDS

Sep 2020 – June 2025

University of Waterloo • Honours Bachelor of Computer Science with Co-op • GPA: 92%
Combinatorics and Optimization Minor
National Math Scholarship: $25,000 for academic and extra-curricular excellence
President's International Experience Award: Studied abroad at NTNU in Norway
Mathematics Undergraduate Research Award: Faculty award for research students

RESEARCH EXPERIENCE

C&O Department, University of Waterloo. *Directed Research Program Mentee*   Jan-Apr 2025

- Formalized Tutte's linking theorem, a generalization of Menger's theorem to matroids, using the proof assistant Lean, with two undergraduate students, led by two graduate students
- Gave a presentation of our work at an end-of-term Directed Research Program seminar

C&O Department, University of Waterloo. *Undergrad Research Assistant*   May-Aug 2024

- Developed and proved approximation algorithms for the NP-complete minimum multicut problem, supervised by Dr. Cheriyan
- Used Gurobi and *lrs* vertex enumeration software to explore lower bounds for the problem's integrality ratio
- Presented relevant background for our research at the Canadian Undergraduate Math Conference

WORK EXPERIENCE

Odaia Intelligence Inc. *Data Science Research Co-op*   Sep-Dec 2023, Jan-Apr 2022

- Developed classification and regression models leveraging xgboost, scikit-learn, and numPy in Python
- Implemented feature engineering for time series prescription data using SQL, python, and pandas
- Deployed feature engineering, model training, and inference to AWS Step Functions using terraform
- Added Weights & Biases support to streamline model prediction error analysis
- Monitored pipeline, triggered containers and tested changes in AWS through ECS and CloudWatch

MNP *Applied Data Intern*   May-Aug 2022

- Performed feature engineering, data analysis, and modelling for a project with 40k data points using Python, pandas, xgboost, scikit-learn, and numPy
- Used SHAP library for feature explainability and bias detection, improving clients' model understanding
- Built front-end for internal web app using React and Javascript, accessing trained model using Flask, and visualising forecasting over time using Chart.js, to communicate model results effectively

Ford Motor Company *Full-stack Software Engineering Co-op*   Sep-Dec 2021

- Dynamically created cloud resources in GCP via terraform and google cloud functions in Java
- Added functionality using React to internal web application with 100+ users
- Gave a presentation on test driven- development with React to 50+ software engineers

The Goal Getters *Robotic Process Automation Intern*   Aug 2020-Feb 2021

- Using Python with Selenium Webdriver, automated testing of the Oracle Hyperion Planning and Oracle HFM workspace, creating a document recording detailed test results
- Eliminated need for EPM consultants to manually test after software patching

PROJECTS & EXTRACURRICULAR

Soccer Team Selection Optimization Model

- Used Gurobi to formulate selecting a soccer team from pool of 2000+ players as an integer program
- Feature engineered and analyzed European football league data using pandas and matplotlib

- Model-constructed team in simulation finished 2 places above expected based on budget

FindAPet Web App
- Web app built using Typescript, React, Flask for searching for cats available for adoption, with label of risk of prolonged shelter stay with a predicted accuracy of 78%
- Hyperparameter-tuned a random forest classifier model from scikit-learn for predictions

Data Science Club VP of Education and Workshop Lead (2023)
- Managed the education team, including overseeing weekly workshops and research paper reading groups on beginner and intermediate data science topics
- Presented a workshop on the capabilities of AutoML in AWS

National-level Synchronized Swimmer
- Placed 3rd in the duet category in the 2024 Canadian University Artistic Swimming League Nationals
- Placed 1_{st} at Eastern Championships in the 2024 Canadian University Artistic Swimming League
- Placed 4th at the Canadian Artistic Swimming National Qualifier in the Senior Free Duet category
- Competed nationally for 8 years

Math Faculty Orientation Black Tie (2022)
- Helped organize orientation events for incoming students, including ice breakers, games, and scavenger hunts
- Led groups of students through team-building activities

Underwater Hockey Club VP Fundraising (2023-present)
- Organized bake sales to fund club equipment and pool rental
- Organized social events such as a triathlon-style competition with the Quadball and Quiz bowl clubs to promote underwater hockey
- Competed in two North American tournaments

Innertube Water Polo Intramural Team Captain (2022-present)
- Organized and played on intramural innertube water polo team for 7 terms

Underwater Rugby Player (2022)
- Played on NTNU's university underwater rugby team while on a student exchange term in Trondheim, Norway
- Competed in the Norwegian Series