Isabelle (Izzy) Wagenvoord

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Education

Colorado College — **Colorado, United States**

B.A. in Computer Science with Mathematics minor (GPA 3.8/4.0) — August 2021 - May 2025

- ➔ **Computer Science**: Natural Language Processing (Python), Data Structures and Algorithms (Python), Theory of Computation, Software Design (Java), Computer Organization (C, Assembly), Team Software Project (Capstone)
- ➔ **Mathematics:** Calculus 3, Discrete Math, Statistics, Probability Theory, Linear Algebra, Ordinary Differential Equations

Donghua University — **Shanghai, China**

Semester abroad — August 2024 - December 2024

Publications

Conference Paper (Peer Reviewed):

Y. Haleem*, **I. Wagenvoord***, Q. Wei, T. Xiao, T. Shu, Y. Ji, **"Understanding Nationwide Power Outage and Restoration for Future Prediction"**, in Smoky Mountains Computational Sciences and Engineering Conference Data Challenge (**SMCDC 2023**), doi: 10.17605/OSF.IO/KTV9U.

Conference Paper (Peer Reviewed):

R. Bevara, **I.Wagenvoord**, F. Hosseini, H. Sharma, V. Nunna, T. Xiao, "**Census2Vec: Enhancing Socioeconomic Predictive Models with Geo-Embedded Data**", in Intelligent Systems Conference 2024 (**IntelliSys 2024**), doi: 10.1007/978-3-031-66431-1_44

Research Experience

Medical Imaging and Data Integration Lab, Michigan State University — **East Lansing, MI**

Research Intern (NSF REU) — May 2024 — August 2024

- Fine-tune pre-trained 3D SwinUNETR (Swin transformers and U-Net architectures) computer vision machine learning model using lab dataset of 56 clinically annotated post-surgery MRI images of brain tumor patients
- Trained and evaluated model on publicly available dataset of 1350 post-surgery MRI images of brain tumors

National Center for Supercomputing Applications, University of Illinois– Urbana Champaign — **Urbana, IL**

Research Intern (NSF REU) — May 2022 — May 2024

- Optimized coefficients for statistical model using Pymoo, Python, Pandas and satellite images to analyze satellite signals for irrigation patterns (R^2=0.6).
- Preprocessed Sentinel-1 satellite images and combined with field-level measurements to produce a time series dataset of 300 rasters of rice fields.
- Developed linear model (R^2=0.67) to predict rice LAI (Leaf Area Index) using satellite data and ground truth measurements.

University of North Texas — **Denton, TX**

Research Intern (NSF REU) — May 2023 — August 2023

- Coauthored accepted paper for Oak Ridge National Laboratory's Smoky Mountain 2023 data challenge in 10 weeks.
- Analyzed 8 years of power outage time-series data for 3000+ counties by algorithmically identifying outage events and finding seasonal patterns using Python and Jupyter. Integrated and analyzed with socioeconomic data.
- Trained and optimized 10 autoencoders for academic study using TensorFlow and Optuna on host university's supercomputing cluster.

Colorado College — **Colorado Springs, CO**

Pathways to SCoRE Fellow — October 2021 —May 2022

- Research assistant supervised by Danielle Ellsworth, a Computer Science professor at Colorado College
- Configured PXE protocol and DHCP on head node to network boot ephemeral Linux OS on 3 worker nodes on virtual machines

Work Experience

Mathematics and Computer Science Department, Colorado College — **Colorado Springs, CO**
Computer Science Paraprofessional — August 2025 — May 2026

- Hold office hours for intro-level computer science courses and occasionally run review sessions
- Organize and manage graders for computer science courses
- Organize social events to build community with computer science students
- Communicate departmental events, opportunities, and major requirements

Quantitative Reasoning Center, Colorado College — **Colorado Springs, CO**
Computer Science Tutor — January 2025 — May 2025

- Hold office hours for Theory of Computation and Computer Science II
- Work weekly shifts during drop-in hours at quantitative reasoning center to answer homework questions

Mattel, Inc. — **El Segundo, CA**
Micro-internship — January 2024

- 25 Colorado College students selected out of 100+ applications
- Lectures and activities from leadership across 6+ departments in the company about corporate structure and product design and marketing
- Designed an idea in 24 hours with a team and pitched to executive leadership

Kokomo Solutions — **Glenview, IL (Remote)**
Software Engineering Intern — June 2020 — August 2020

- Enhanced COVIDTracker software UI using JavaScript, Angular.js, and TypeScript based on user stories written by product manager.
- Wrote and implemented user stories and provided client support.

Awards

Stephen Janke Prize in Computer Science — **2025**

- Awarded to the graduating senior who best demonstrates exceptional talent, breadth of achievement, and academic excellence in Computer Science.

Fulbright Research Semifinalist (Alternate Select) — **2025**

- Proposal to conduct robotics research with Professor Florian Shkurti at University of Toronto, Canada.
- Title: “Accident Simulation for Self-Driving Vehicles” to use NeRF models to realistically simulate adversarial self-driving environments for imitation learning agents. Selected as an Alternate.

Best Poster — **2023**

- awarded by Smoky Mountains Computational Sciences and Engineering Conference Data Challenge

Dean’s List — **2022-2024**

Colorado College Euclid Scholarship — **2022**

- “awarded to students who show exceptional promise in mathematics or computer science.”
- 17 selected out of 112 nominations

Questbridge National College Match Finalist — **2020**

- Recognizes low-income high school seniors with outstanding academic achievement

Skills

Languages: Python, Latex, JavaScript, Bash, Java
Tools: Git, SLURM, Linux, Docker, HTML/CSS
Libraries: PyTorch, Tensorflow, Pandas, NumPy, scikit-learn, SciPy, Matplotlib, Jupyter, Geopandas, Rasterio

Projects

Senior Vocal Recital (Link to Livestream) — **2022-2024**

- 30 minute vocal performance with turnout of 25+ people consisting of classical, opera, and broadway pieces

Extracurriculars

Choir and solo roles in Opera Scenes production: Spring 2022, Spring 2023, Spring 2024, Spring 2025