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

Research Experience

Michigan State University | Medical Imaging and Data Integration Lab — 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.

University of Illinois–Urbana Champaign | National Center for Supercomputing Applications — 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 ($R^2 = 0.60$).
- 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

- Co-first author on accepted paper for Oak Ridge National Laboratory's Smoky Mountain 2023 data challenge.
- 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.

Publications

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

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

Work Experience

Mathematics and Computer Science Department, Colorado College — Colorado Springs, CO
Computer Science Paraprofessional — August 2025 – Present

- Run office hours for students in all core introductory and advanced computer science courses.
- Organize community-building social events for computer science students and faculty.
- Communicate departmental events, opportunities, and major requirements.
- Coordinate and manage graders for computer science courses.

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

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

Awards

Stephen Janke Prize in Computer Science, Colorado College — 2025

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

Fulbright Research Semifinalist (Selected as Alternate Candidate) 2025

Proposal: Using NeRFs and Gaussian Splatting for adversarial self-driving environment simulation with Professor Florian Shkurti at University of Toronto, Canada.

Best Poster Award, Smoky Mountains Computational Sciences and Engineering Data Challange 2023

Dean's List 2022–2024

Colorado College Euclid Scholarship 2022

Awarded to students who show exceptional promise in mathematics or computer science (17 out of 112 nominations).

Skills

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

Extracurriculars

Opera Scenes 2022 – 2025

Choir and solo roles: Spring 2022, Spring 2023, Spring 2024, Spring 2025

Senior Vocal Recital (Link to Livestream) May 2025

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