Cassandra Goldberg

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EDUCATION

University of Pennsylvania Philadelphia, PA | September 2020 - May 2029 (Expected)
Ph.D. in Computer Science
Focus: Trustworthy, Explainable, and Responsible AI
Relevant Courses: Advanced Topics in Machine Learning, Large Language Models

Bowdoin College, **3.93**/4.0 **GPA** Brunswick, ME | September 2020 - May 2024
Majors/Minors: Computer Science and **Physics** (Majors), Government & Legal Studies (Minor)
Awards: Sarah and James Bowdoin Scholar (Top 10% of Class) (2021, 2022, 2024)
Relevant Courses: Artificial Intelligence, Computer Vision, Financial Machine Learning, Computational Creativity, Algorithms/Data Structures, Computer Systems/Networks, Software Design, Linear Algebra, AI Ethics

RESEARCH EXPERIENCE

Bowdoin Computer Science Department Brunswick, ME | September 2023 – May 2024
Honors Research Project: Statistically-Principled Deep Learning for SAR Image Segmentation
- Investigated statistically-sound deep learning techniques for synthetic aperture radar (SAR) image segmentation
- Leveraged G^0 distribution sampling and Perlin noise to generate realistic synthetic remote sensing data
- Modified U-Net architecture to encompass statistical moments and employed unsupervised stochastic distance losses

National Center For Supercomputing Applications at UIUC Urbana-Champaign, IL | May 2023 – July 2023
FoDOMMaT Research Fellow (NSF REU)
- Developed machine learning models to predict fractures based on geophysical well logs in potential carbon capture and storage sites, mitigating risks of CO_2 leakage and induced earthquakes
- Implemented Random Forest, XGBoost, Neural Network, and LSTM models using PyTorch, Scikit-Learn, and Ray
- Presented a final poster at a 400+ attendee symposium and received a letter of recognition for outstanding contributions

Bowdoin Burns Research Fellowship Brunswick, ME | May 2022 – August 2022
Research Assistant For Atmospheric Physics Project
- Updated and utilized MATLAB/LabVIEW program to extract and analyze CO_2 and O_2 fluxes in the Harvard Forest
- Discovered a subtle equipment malfunction that compromised all O_2 data since 2012 and located the faulty hardware

PROJECTS

Audio-Visual Emotion Mismatch Detector | *Python/Pytorch, December 2023*
- Multi-modal convolutional neural network that identifies emotion mismatch in facial expressions and auditory tone
- Encompasses supplementary demographic metrics for gender/racial bias analysis and mitigation

AI Pacman | *Python, December 2022*
- Implements efficient pacman agent with increasing sophisticated AI and machine learning techniques
- Employs A* search, Particle Filtering, Markov Decision Processes, Reinforcement/Q-Learning, and Neural Networks

Star Simulation | *Python, December 2022*
- Numerical simulation of a polytropic star that can simulate stellar pulsations, stellar collapse, and supernova explosions
- Utilizes Runge-Kutta methods, interpolation, finite differencing, method of lines, root finding, fourier transformations

WORK EXPERIENCE

Bowdoin Computer Science/Math Departments Brunswick, ME | September 2021 – May 2024
Learning Assistant
- Facilitate weekly Artificial Intelligence (previously Intro CS and Multivariate Calculus) learning sessions, offering code debugging assistance, addressing high-level conceptual questions, and providing feedback on homework

The Lee Company Westbrook, CT | May 2021 – August 2021
Mechanical Engineering Intern in the Solenoid Department
- Investigated historical inventory records and presented on the department's cost and time inefficiencies
- Created Excel interface that allows engineers to sort and compare flow rates associated with various solenoid valves

LEADERSHIP/ACTIVITIES

Bowdoin Women in Computer Science Brunswick, ME | September 2021 – May 2024
- Exchange mentorship and support with female peers who share my interest in technology and computer science
- Received Grace Hopper Celebration 2023 Student Scholar Award, selected for exclusive diversity and mentorship events

SKILLS

Languages/Libraries: Python, Java, C, PyTorch, Scikit-Learn, Pandas, MySQL, JavaScript, HTML, Visual Basic
Tools: Git, UML, Linux/Unix, MATLAB, JupyterLab, LabVIEW, Python Notebooks, Eclipse, VSCode, Microsoft Excel