Bertha Shipper

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Motivated computer science student with hands-on experience in machine learning, AI, and software development. Skilled in building end-to-end solutions that extract insights from complex, multimodal data using Python, R, and Java, with experience in scalable pipelines, regression, and dimensionality reduction. Passionate about applying technical and research expertise to develop innovative solutions and data-informed products in real-world business environments.

EDUCATION

Vassar College | Poughkeepsie, NY   **Expected May 2027**
Bachelor's Degree in **Computer Science** with a Minor in **Applied Mathematics**   **GPA:** 3.97/4.00

WORK EXPERIENCE & LEADERSHIP

AI & Machine Learning Intern | *Guardian Life*   **May – Aug 2026**
- Selected for an immersive internship focused on the design, development, and implementation of Generative AI applications and digital assistant solutions in a global financial services environment.
- Will collaborate with cross-functional teams to translate business requirements into technical solutions, conducting research on natural language processing, machine learning, and LLM technologies.
- Expected to apply Python and AI/ML frameworks to real-world projects while gaining experience in model development, deployment, and scalable solutions.

Applied Machine Learning Research Intern | *UChicago Data Science Institute* | *GitHub*   **Jun – Aug 2025**
- Built a **scalable multimodal ML pipeline** integrating computer vision, speech, and NLP to predict fMRI brain responses to movie/TV stimuli, enabling efficient analysis of neural data across subjects.
- Developed and tuned **regularized regression models** (ridge/voxel-wise) on an HPC cluster, using cross-validation and automated hyperparameter search; ranked 27/200+ teams in the global 2025 Algonauts Challenge.
- Optimized model performance on high-dimensional data by applying **PCA**, **statistical modeling**, and **parallelized preprocessing**, cutting compute costs while boosting predictive accuracy.

Product Developer, Treasurer, Co–Founder | *Vassar Ping Pong Club* | *Web Application*   **Oct 2023 – Present**
- Developed and deployed a **full-stack Tournament-Manager web app** to automate event logistics — including dynamic match generation, real-time roster updates, automated leaderboards, and scalable support for 50+ participants — cutting admin work by 80%.
- Drove **141% growth in club participation** by streamlining registration and improving user experience through automation of tournament logistics and **intuitive web interface design**.
- Oversee **club finances and budget optimization**, optimizing fund allocation and resource distribution to maximize impact, ensure financial stability, and improve member retention.

Lay Review Editor | *Grey Matters Neuroscience Journal* | *Issue 9* | *Issue 10*   **Sep 2024 – Present**
- Transform complex neuroscience research into **accessible, reader-friendly articles**, enhancing comprehension while maintaining accuracy and scientific integrity.
- Collaborate with a team of authors, editors, and artists to refine content, streamline revisions, and deliver polished articles on deadline for an acclaimed peer-reviewed publication.

Data Analysis & Consumer Insights Intern | *Beats* | *Final Presentation*   **Aug – Sep 2024**
- Conducted end-to-end **consumer analytics** in **R** on large-scale customer feedback datasets, performing data cleaning, feature engineering, and exploratory analysis to uncover behavioral patterns that informed Gen Z–focused marketing strategy across multiple product lines.
- Applied **clustering** and **sentiment analysis** to segment customer populations and quantify satisfaction trends, translating text data into actionable insights that guided campaign targeting and product positioning decisions.
- Designed high-impact visualizations using ggplot2 and tidyverse tools to communicate demographic, usage, and sentiment patterns to cross-functional marketing and product teams.

PROJECTS

The Flow State: Neuro–Aesthetic Focus Environment | *Live Web App* | *GitHub*   **Feb 2026**
- **Motivation:** Traditional productivity timers interrupt focus with notifications and numerical monitoring. I built a closed-loop system that externalizes time perception through generative art and sound, creating a non-intrusive environment designed to support sustained deep work.
- **Impact:** Enabled users to perceive session progress spatially rather than numerically, reducing task-switching and cognitive fatigue while promoting flow-state concentration through perceptual and auditory feedback.
- **Method:** Engineered a real-time generative graphics system that maps elapsed time to progressive visual density; implemented a dual-oscillator Web Audio engine that modulates binaural beats along an arousal curve aligned with cognitive performance research; designed multiple visual logic modes optimized for analytical, creative, and meditative work contexts. Built a peripheral-awareness UI using translucency and low-contrast motion to offload temporal monitoring to peripheral vision and minimize central executive load.
- **Tools:** JavaScript, p5.js, Web Audio API, generative graphics, human–computer interaction, cognitive UX design.

Pantry Pal: Kitchen App for Managing Allergies and Reducing Food Waste | *GitHub*   **Sep 2024 – Jan 2025**
★ **People's Choice Award**, *New York Celebration of Women in Computing (NYCWiC)*   **Apr 2025**
- **Impact:** Developed an **Android app** that helps users manage pantry inventory, plan meals, and reduce food waste while accommodating dietary restrictions. Improved kitchen organization, prevented duplicate purchases, and enhanced accessibility for users with allergies.
- **Method:** Built on Android platform using **MVC architecture**; implemented dynamic pantry tracking, personalized recipe suggestions, a customizable digital cookbook, and integrated grocery list management. Led product development by defining **user-focused goals**, conducting **usability testing**, and iteratively refining features to optimize **UX, scalability, and reliability**.
- **Tools: Java, Android Studio, MVC architecture, local storage, user-centered design, interactive UI, usability testing**.

Tournament Manager Web Application | *Live Web App* | *GitHub*   **Apr 2025**
- **Motivation:** My club faced challenges managing large-scale tournaments due to error-prone manual processes, which became unsustainable as participation grew. I aimed to build a **scalable, user-friendly solution** to automate logistics and enhance both management and participant experience.
- **Impact:** Automated tournament logistics, **reducing manual administrative effort by 80%** and enabling smooth management for 50+ participants, contributing to a **141% increase** in club participation.
- **Method:** Developed fair matchup **generation algorithms**, implemented dynamic roster management with real-time score tracking, and iteratively refined features based on **user feedback** and scalability needs. Engineered **persistent data storage using localStorage**, eliminating the need for a backend server. Designed a **clean, responsive UI** optimized for **desktop and mobile**.
- **Tools: JavaScript, HTML, CSS, responsive web design, full-stack web development**.

SKILLS

- **Programming Languages:** Python, Java, R, C, JavaScript, OCaml
- **Machine Learning & Data Science:** Machine Learning, Regression Analysis, Feature Engineering, Dimensionality Reduction (PCA), Predictive Modeling, Model Evaluation, Hyperparameter Tuning, Multimodal Data Processing, Statistical Modeling, Data Cleaning & Wrangling
- **Deep Learning Frameworks & Tools:** PyTorch, scikit-learn, NumPy, pandas, Matplotlib, Seaborn
- **Data Analysis & Visualization:** R (ggplot2, dplyr, tidyr), Jupyter Notebook, Data Visualization, Sentiment Analysis, Clustering (K-means)
- **Software Development & Tools:** Git, GitHub, Linux/Unix, Bash/Shell Scripting, High Performance Computing (Slurm), MVC Architecture, Full-Stack Web Development
- **Other Technical Skills:** Neuroimaging Data Handling (fMRI processing, brain parcellations), Experimental Design, Cross-Validation, Statistical Testing