Sebastian Ashcallay Silva

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PROFESSIONAL GOAL

Computer Science student with experience in software development, AI/ML, and web technologies. Seeking to contribute to innovative, scalable software solutions, with a focus on building data-driven and AI-assisted applications.

TECHNICAL SKILLS

Languages: Python, Java, C, JavaScript, HTML, CSS, SQL, OCaml, Bash, Dart
Frameworks: Node.js, Express.js, FastAPI, Firebase, Flutter, React, FFMPEG
Developer Tools: PostgreSQL, MongoDB, Git, VSCode, Jira
Certifications: Relational Databases (FreeCodeCamp), Responsive Web Design (FreeCodeCamp)

EDUCATION

University of Maryland-College Park, College Park, MD
B.S. in Computer Science w/ Machine Learning Concentration, Minor in Mathematics | GPA: 3.5 | Exp. Dec. 2025

Montgomery College, Rockville, MD
A.A. in Computer Science, with Honors | GPA: 4.0 | Aug. 2022 — Dec. 2023
Honors: *Frank L. Verwiebe Award (2023)*

INTERNSHIPS

Apollonian
Software Developer Intern | Remote | Jan. 2025 — Jul. 2025

- Integrated Generative AI tools with video-editing software (FFMPEG) for the company's serverless website using the Firebase Python SDK as part of a development team of five people.
- Implemented concurrent programming techniques to optimize performance by 40%; maintained robust coding practices through sanity checks, working examples, and version control with GitHub (branching, pull requests).
- Led and coordinated three weekly recorded meetings through Google Meet, presenting code updates, planning development milestones and sprints in Jira, and discussing technical strategies with team members.
- Built and deployed a documentation page for the Videos Team with live-testing Firebase functions, using HTML/CSS/JS for the frontend and Netlify for deployment.

PERSONAL PROJECTS

City Identification via Celestial Image Classification
Co-author | College Park, MD | Mar. 2025 — May. 2025 | Python, PyTorch, ResNet18, NumPy, Matplotlib

- Co-developed and fine-tuned a ResNet18 CNN to classify geographic location from stereographic star-field projections, achieving **95.25% precision** and **100% Top-3 accuracy** across 20 U.S. cities.
- Engineered two synthetic datasets, totaling over 2700 images, using custom Python pipelines for sky rendering and augmentation with simulated cloud cover, blur, and light pollution.
- Implemented preprocessing, normalization, and transfer learning for high-dimensional celestial data, evaluated performance using confusion matrices, F1-scores, and precision-recall metrics.
- Demonstrated proof-of-concept for AI-based celestial navigation in a five-page report, highlighting machine learning's potential in spatial reasoning and visual inference.

Predicting Professor Ratings Using Regression Models
Author | College Park, MD | Feb. 2025 — Apr. 2025 | Python, Pandas, Scikit-Learn, NumPy, Matplotlib

- Developed predictive models to estimate University of Maryland professor ratings from over 37,000 PlanetTerp platform reviews, integrating text sentiment, keyword frequencies, and grading data across 4,100+ professors.
- Engineered professor-level features using sentiment analysis (VADER), one-hot keyword encoding, and Principal Component Analysis (PCA) to reduce dimensionality and eliminate redundancy.
- Trained and validated multiple regression models with 10-fold cross-validation and weighing total reviews plus longevity, achieving a best **Mean R^2 of 0.785** and **Mean RMSE of 0.452** using Ridge Regression.
- Identified sentiment intensity and frequent use of the keyword "great" as strong predictors of high professor ratings (correlation ≈ +0.4).

Tabletop Companion App
Co-developer | College Park, MD | Feb. 2025 — May. 2025 | Flutter, Dart, Android Studio

- Developed the **Rules/Stats page** for a mobile companion app for tabletop RPGs, enabling users to view, add, edit, and delete custom characters with attributes, weapons, and inventory.
- Implemented **local database support** using sqflite to store character stats, default/custom character information, and ensure persistent state across sessions.
- Collaborated on multi-tab functionality, including grid-based map interaction and shake-to-roll dice simulator, supporting limited multiplayer (2-4 players) with shared game state via Redis.
- Enhanced user experience with ergonomic UI design, scrollable stat pages, interactive character tiles, and summary popups for quick stat access.
- Tested and debugged app functionality using Android Studio emulators to ensure seamless navigation and performance across devices.

WORK EXPERIENCE

C2 Education, Bethesda, MD, Sep. 2024 — Jul. 2025
Role: *Tutor*

- Worked weekly between three days, three 2-hour sessions per day, and 1-3 students per session.
- Developed and implemented lesson plans for SAT/ACT, IB, and AP exam preparation, including practice exams, question banks, and guided instruction for STEM courses (e.g., Calc II, Physics, AP CSP/CSA).
- Advised high school students on college readiness, course planning, and exam preparation.

Varsity Tutors (Remote), Jun. 2024 — Sep. 2024
Role: *Tutor*

- Registered to tutor K-12 students, college students, and adults in Math, Spanish, and Programming.
- Write and share weekly lesson plans through Google Docs in both Spanish and English
- Used IDEs such as VSCode to teach JavaScript and Python

Ethridge, Quinn, Kemp, Rowan & Hartinger, Rockville, MD, Apr. 2023 — Jan. 2024
Role: *Receptionist*

- Worked as a receptionist for a law firm of over 10 lawyers during weekday office hours
- Received and attended to clients, outside lawyers, and court personnel inside the main branch's offices
- Offered translation to clients and lawyers for conversational purposes (Spanish/English)
- Scheduled and supervised business-related services during office hours: equipment maintenance, hauling, shredding
- Extensively used Microsoft Office for in-office communication, client data management, and scheduling meetings