Daniel Engbert

Software Engineer

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Education

University of Maryland Baltimore County (UMBC)

Baltimore, MD

Bachelor of Science in Computer Science, with a minor in Mathematics, GPA: 3.7/4.0 — *May 2019*

- Member of the UMBC Hackers Club (participated in 5 hackathons)
- Member of the UMBC Environmental Task Force (ETF) Club

Experience

global-board.org

Baltimore, MD

Founder — *July 2021 - Present*

- Designed and implemented a website to help users learn about every country (showing whats trending and embedding learning resources specific to each country's history, travel, and culture). Implemented with React, Node.js, PostgreSQL, and hosted on Google Cloud.
- Using the Spotify, and Twitter APIs (to track trends across countries) and the Youtube API to automatically find the best educational videos about each country.
- Analyzing user activity over time to inform continued development of the site.

Scale AI

San Francisco, CA

Product Engineer — *Feb. 2021 - June 2021*

- Developed a full stack (self service) tool for customers to upload data (e.g. images, documents) and receive a labeled dataset for training their AI algorithms. Automated assigning workers to labeling a project's data, managing their assignment with automated training courses and quality control mechanisms (using React, Node.js, and MongoDB).
- Presented system demos and provided support to customers to reach their project goals; ultimately enabling higher quality datasets for their machine learning applications.

Robotic Research LLC

Gaithersburg, MD

Software Engineer — *June 2019 - Jan. 2021*

- Supporting the development of autonomous software for the electric shuttle "Olli." Lead the deployment/mapping process for new autonomous routes across several cities.
- Led the creation of a web app for searching/downloading data (stored in the cloud) collected from fleets of autonomous vehicles around the world (utilizing Flask, and various AWS services).
- Trained a neural network to perform vehicle detection on synthetic datasets and evaluated the performance on real-world images.

Computer Vision Intern — *June 2018 - Aug. 2018*

- Trained/evaluated a (Mask R-CNN) neural network on several (autonomous vehicle related) datasets to perform object detection in photos and wrote Python scripts to combine various datasets into a common format for training. Created a C++ camera driver for a computer vision system in a ROS pipeline.

UMBC

Baltimore, MD

Teaching Assistant (TA) — *Aug. 2018 - May. 2019*

- Worked as a TA for an object-oriented programming and design C++ course. Led a weekly lab section to help students understand the week's material while evaluating their lab projects. Helped students understand and overcome obstacles (e.g. debugging) with course projects each week during office hours and assisted the professor with grading/proctoring exams.

Private Tutor — *Feb. 2018 - Dec. 2018*

- Worked as a personal tutor for a C++ data structures course, helping students to deeply understand course concepts while fostering their ability to perform independent problem solving/learning while tackling course projects.

Resident Assistant (RA) — *Aug. 2016 - May. 2018*

- Managed a floor of 30 students for two years and prepared educational programs related to diversity, culture, wellness, study skills, games, etc.

AT&T

Columbia, MD

Software Developer Intern — *May. 2017 - Dec. 2017*

- Improved a network security tool by writing shell scripts to manage a Hive database built on top of a Hadoop Distributed File System, and by integrating a deep packet inspection C library into the tool. Participated in (Agile) code reviews and sprint planning.

Imaging Research Center at UMBC

Baltimore, MD

Full Stack Web Developer Intern — *June 2016 - Aug. 2016*

- Helped develop retrieverstories.umbc.edu, a custom social media site for current/former students to share their experiences. Developed new features using PHP, SQL, HTML, and CSS.

Projects

A.I. Algorithms

- Implemented a feed forward neural network from scratch in Python using NumPy and evaluated the performance on the MNIST dataset after studying the linear algebra and calculus needed to implement backpropgation through an online course.
- Implemented the Hill Climbing and Simulated Annealing optimization algorithms in Python to optimize employee shift schedules with respect to a heuristic function.
- Implemented a decision tree for data classification, the K-Means classification algorithm, various graph search algorithms, and the tf-idf algorithm for practicing NLP.

Computer Vision (Research Course)

- Implemented an algorithm to stitch overlapping images together into a panorama. Used Harris Corner Detection to identify key points in each image, and the RANSAC algorithm to identify the best points to use to compute a perspective transformation for aligning the images.
- Implemented image classifiers (distinguishing dogs and cats) using a Support Vector Machine (SVM), and the K-Nearest Neighbour (KNN) algorithm. Experimented with different methods of generating descriptors for image features (e.g. SIFT descriptors) and evaluated performace using K-Fold cross validation.
- Implemented (as a reasearch project) a traffic light detector algorithm using Histogram of Oriented Gradients (HOG) features, a Support Vector Machine (SVM). Applied the model to test images using a gaussian pyramid with a sliding window.

Ray Tracer

- Implemented a ray tracer in C++ capable of rendering images and videos of 3D scenes with shading, shadows, and reflections. Also implemented a rasterizer and 3D mesh smoother algorithm. This project used a heavy amount of applied linear algebra and was implemented from scratch.

Skills & Achievements

Programming Languages	Python, C++, C, bash, Javascript, HTML, CSS, SQL, MongoDB, R, Java
Frameworks & Tools	React, Node.js, Flask, Docker, Apache, NGINX, ROS, Android Studio
Design Software	SolidWorks, SketchUp, GIMP (photo editing), Davinci Resolve (video editing)
Electronics	Extensive Arduino and PIC microcontroller experience
Foreign Languages	Spanish (fluent), Portuguese (conversational)
Achievements	Eagle Scout (2014), National Honor Society Member, FIRST Robotics club (national championship participant)