Phillip Volkov

Student at the University of Washington - Paul G. Allen School for Computer Science and Engineering
phillipvolkov@gmail.com linkedin.com/in/phillip-volkov github.com/PhillipVolkov

Education

University of Washington **Seattle, WA**
Bachelor of Science in Computer Science 3.88 GPA *9/2022-6/2025*

- **Selected Coursework:** Foundations of Computing I, Intro to Embedded Systems, Software Design and Implementation, The Hardware/Software Interface, Foundations of Computing I, Foundation of Computing II, Data Structures and Algorithms
- **Awards:** Dean's List

Experience

UWashington Formula Motorsports **Seattle, WA**
Software Engineer - Driverless Team *01/2023 - Present*

- Created a simulation environment for virtual simultaneous testing of the software stack
- Planned a systems architecture for a driverless race car system and developed the corresponding ROS nodes
- Worked with electrical engineers to create and integrate a CANBUS network for intra-system communication
- Trained a custom YOLOv8 model to detect bounding boxes of cones on the race track
- Optimized the model to run at 60+fps on an NVIDIA jetson, using tensorRT and threading
- Implemented the distortion pinhole model to project camera rays, translating the 2D bounding box into a 3D prism in world coordinates

FRC Team 1294: Top Gun Robotics **Sammamish, WA**
Director of Software *09/2019 - 07/2022*

- Designed object-oriented code frameworks and finite state machines for robust functionality under user control, and to aid efficiency of development.
- Created PID control systems and custom driver assistance code based on robot IMU measurements to ensure precise movement.
- Utilized the LimeLight camera to detect the vision targets on the goal, working in conjuction with the created autonomous PID-based systems to orient the robot to line up and score.
- Led and managed a group of 15 members through the Software Development Cycle to create autonomous and user-controlled code within 6 weeks
- Constructed and facilitated the use of a training program comprising of lectures and exercises for new members to learn Java and FRC programming fundamentals.

Personal Projects

Portfolio Website- https://github.com/PhillipVolkov/PortfolioWebsite **11/2023 - 12/2023**

- Designed and created a front-end using React, with extensive use of HTML and CSS for styling.
- Used a Node.JS server to host the React app client.
- Produced a custom splash screen animation utilizing sine waves to generate random particle motion.
- Created a custom carousel and pop-up modal using React hooks and state.
- Deployed and maintained website on a custom domain.

Tennis Ball Trajectory Tracking - github.com/PhillipVolkov/BallTracking **06/2023 - 08/2023**

- Utilized an image preprocessing framework (OpenCV) and an image classifier (Yolov8) to create a real-time video-processing model to classify live tennis balls in play. The model was able to be run at over 100FPS and had an 85% classification accuracy at under 2m.
- Extracted ball position data from the classifier's bounding boxes to store the ball's trajectory and detect when a bounce occurs based on data-derived features. The classifier was accurate for 95% of bounces for heights of over 25cm.
- Constructed the program using OOP-based techniques, leading to organized, modular, and reliable code allowing for faster integration of the essential systems.

Arduino Emulator - https://github.com/PhillipVolkov/ArduinoEmulator **02/2022 - 04/2022**

- Used HTML / CSS / JavaScript to create the webapp frontend, allowing users to wire elements and interface with a virtual Arduino, along with providing the functionality to write code to it.

- Designed and created a framework using Objected-Oriented Design for storing and parsing user-inputted Arduino wiring and code.
- Created a relational database using PostgreSQL to store the state of and process user-inputted Arduino wiring and code, along with user details.
- Utilized Spring Boot for development, implementing the designed framework and linking UI functionality with the relational database.

Wiki Links - github.com/PhillipVolkov/WikiLinks **07/2021 - 01/2022**

- International Baccalaureate (IB) research project to compare the performance of a naive algorithm and one utilizing a combination of machine learning algorithms to classify whether hyperlinked text matched its linked web-page
- Utilized text preprocessing combined with natural language processing (NLP) techniques such as lemmatization and stemming to prep the corpus for analysis
- Learned and applied the Word2Vec technique, creating a custom-trained model with common computer-science jargon to determine the similarity of phrases
- Combined the previous techniques as features within the linear kernel SVM classification, with a specialized test-set to ensure excellent outlier performance

Private Chat App - github.com/PhillipVolkov/PrivateChatAppProject **05/2021 - 06/2021**

- Constructed a web frontend using HTML / CSS / JavaScript, consisting of a simple log-in page and an interface for sending messages between friended users.
- Implemented animations and real-time update calls using Javascript.
- Developed using Spring Boot, filtering out non-user messages via database calls and providing those to the front-end.
- Used PostgreSQL to create a simple database for storing user details and associated messages.

Budget Application - github.com/PhillipVolkov/BudgetApp **02/2021 - 03/2021**

- Full-stack development of a web application to allow a client to sort and monitor their transactions on a monthly budget
- Designed and created the web frontend using HTML / CSS / JavaScript, providing users the ability to upload, sort, and view the summary of their transactions in visually appealing charts and tables
- Developed using Spring Boot, linking the front-end with the database, along with sending Google Places API calls during sorting to obtain merchant details for each transaction, allowing categorization.
- Utilized PostgreSQL to store the user's transactions, implementing relational database techniques to optimize storage of data and reducing the amount of necessary API calls for known merchants.

Technical Skills

Languages: Java, Python, C, Assembly, SQL, HTML, CSS, React, Node, Typescript
Developer Tools: Github, Visual Studio, IntelliJ, Azure DevOps
Technologies/Frameworks: Rest API, Spring Boot, Django, YOLO, OpenCV