Emanuel André Medina Araujo

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Education

Technical University of Munich — Munich, DE
Bachelor of Science in Computer Science, Application Area in Physics — *Oct. 2020 – Apr. 2026*

Herzog-Christoph-Gymnasium — Beilstein, DE
Abitur, Received MINT-EC certificate with distinction — *Sep. 2012 – Sep. 2020*

Experience

Working Student Software Engineer — Nov. 2024 – Present
Vector Informatik GmbH - VSceneCreator (3D OPENDrive Editor) — *Munich, DE*

- Collaborated to develop the 0.1 alpha version of VSceneCreator as an Unity application in C#. Suggested, designed, implemented and wrote tests for core features and bugfixes in close collaboration with Product Management.
- Architected a read-only "Explore Mode" with a hierarchical overview tree and dynamic tooltip system, segregating access to editing features resulting in a preview tool for licensed users and an improved UX for free users.
- Improved edit mode switching performance by restructuring the base model to enable lazy loading for non-essential and non-visible objects resulting in up to 70% faster switch times.
- Optimized file loading through batched object creation and an enhanced progress bar replacing application freezes resulting in 10% faster loading times, reduced memory usage and a better UX.
- Implemented support for single-sided lanes, enabling users to load OPENDrive files with single-sided lanes by automatically converting them to normal lanes resulting in prevention of broken files.
- Streamlined developer tools by integrating Unity with Rider resulting in 10% faster compile and refresh times.

Working Student Software Developer — Mar. 2021 – Oct. 2024
Vector Informatik GmbH - DYNA4 (Simulation environment for virtual driving tests) — *Munich, DE*

- Contributed to develop the full release versions of 4.0 to 9.0 of DYNA4 in addition to service packs.
- Developed new frontend features and fixed bugs in a Java, improving UI responsiveness and stability.
- Built internal services and automated test cases using JUnit and custom frameworks, reducing manual QA effort.
- Refactored legacy components by large refactorings, improving maintainability and long-term scalability.
- Enhanced CI pipeline by optimizing Jenkins integration and extending JUnit and SWTBot test coverage, resulting in faster and more reliable builds.
- Proposed, presented, and iteratively refined feature designs with Product Management, leading to faster alignment and more user-driven development.
- Designed and implemented a model and persistence layer for trace signals, including a custom editor, enabling better signal tracking and debugging.
- Implemented and maintained various features and bug fixes in Java using the Eclipse RCP framework, improving user workflows in simulation configuration.
- Redesigned the trace signal selection view for simulation configurations, resulting in a clearer UI and faster user interaction.
- Built a new view for assigning alias names to trace signals, increasing flexibility and improving signal traceability across simulation projects.
- Refactored dialogs for handling unreferenced and unsaved simulation artifacts, enhancing transparency and reducing configuration errors.
- Wrote automated SWTBot UI tests for critical workflows, improving regression test coverage and reducing manual testing time.
- Optimized the CI pipeline by extending and improving the integration of JUnit and SWTBot tests into Jenkins, reducing build failures and test flakiness.
- Used Git and GitHub for version control and code reviews, ensuring consistent code quality and effective team collaboration.
- Presented feature implementations to Product Management and incorporated feedback iteratively, aligning development with user needs.

Projects

Thesis | *Python, Flask, React, PostgreSQL, Docker* June 2020 – Present

- Developed a full-stack web application using with Flask serving a REST API with React as the frontend

Bachelor Practical Course | *Spigot API, Java, Maven, TravisCI, Git* May 2018 – May 2020

- Developed a Minecraft server plugin to entertain kids during free time for a previous job

Humanoid Robot arm | *ROS, Python, OpenCV, TensorFlow* May 2018 – May 2020

- Developed a control system for a humanoid robot arm using ROS

Technical Skills

Languages: C#, Java, C/C++, Python, React Native, MATLAB
Developer Tools: Git, Rider, VS Code, Unity, VIM Motions, Eclipse, PyCharm, Jenkins
Relevant Course Work: C#, Java, C/C++, Python, React Native, MATLAB