

Punit Lodha

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EDUCATION

Saarland University

Saarbrücken, Germany

Masters in Computer Science

Oct 2022 – Present

- Data Networks, Compilers, Distributed Systems, Databases
- **Thesis:** Enhancing video streaming quality of experience using partially reliable transport and QUIC

EXPERIENCE

Software Engineering Intern

Jan 2023 – Present

Lumeo

Remote, San Fransisco

- Implemented the MQTT transactional outbox pattern to ensure reliable message delivery and consistency between the database and message broker, enhancing system robustness and fault tolerance
- Designed a python service and an axum backend in rust to provide new users with a free cloud gateway, using kubernetes, to perform custom video analytics on their cameras and streams
- Implemented background jobs to automate stream renaming for consistency, clean up expired events, and delete orphaned deployments upon source deletion
- Implemented APIs for dashboards, tagging entities, and other quality of life features

Software Engineering Intern

Dec 2021 – Sept 2022

Emotech.ai

Remote, London

- Developed a streaming media library in rust using ffmpeg to extract audio samples and video frames
- Integrated this library in a microservice for a multimodal pronunciation assessment engine, leading to 10% increase in the engine's media decoding performance
- Optimized resource loading for the text normalizer to see performance gains of 6%
- Implemented an API using axum to render animations into 3D models using the FBX format

Student Developer

Mar 2021 – Aug 2021

Google Summer Of Code 2021 w/ CCEXtractor

Remote

- Worked with CCEXtractor over the summer on the rewrite in rust project. [View Project](#)
- Ported the CEA-708 decoder from C to Rust, with significantly improved timing and documentation
- Added writers for different subtitle formats such as SRT, SAMI, transcripts, etc to the decoder
- Integrated the rust code into various build systems such as Cmake, Autotools, Visual Studio on linux and windows platforms

Software Engineering Intern

July 2020 – Sept 2020

Rockmetric

Remote, Mumbai

- Redesigned the login workflow and implemented the same in react
- Improved overall UI/UX of Dashboards and added quality of life features such as quick resize, filters, etc

VOLUNTEER

Mentor

May 2022 – Present

Google Summer Of Code 2022, 2023 and 2024 with CCEXtractor

Remote

- Maintained the rust codebase and conducted code reviews to check PRs
- Took regular updates from the GSoC students and mentored them on their projects

PROJECTS

Bitr | *Rust, tokio*

- Implemented the Bittorrent Protocol Specification to create a bittorrent client in rust
- Used the rarest first piece picking algorithm to even out the piece distribution in the swarm and increase tolerance to peer's leaving

TECHNICAL SKILLS

Languages: Rust, Javascript, Go, C/C++, Python, Java, HTML/CSS, SQL

Frameworks: Postgres, Axum, React, Node.js, Material-UI

Developer Tools: Git, Docker, Kubernetes, GitHub actions, Figma, GCP, Azure, VS Code, Visual Studio, Neovim