Rajdeep Bandopadhyay

Software Engineer

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Education

B.Sc in Computer Science
University of Cincinnati
College of Engineering and Applied Science, Class of 2023

Technical Proficiencies

Languages C, C++, bash, OCaml, Haskell MATLAB, Rust, YANG, MAKEFILE

Tools JIRA, Git, Sysrepo/netopeer2, TensorFlow, C++ GUI (ImGUI, DirectX), Low-Latency Systems C/C++ [using CRTP, Cache Warming, Threads & MQ]

Operating Systems Linux, macOS, Raspbian OS, Unix, Xilinx Kernel Linux

Industry Knowledge Encryption, ClickHouse, IPC Frameworks, FPGA, NETCONF, Jenkins Job Pipelines, RFC 5000's-6000's, Time Series Analysis, Mathematical Modeling [Limited to: Hurst Exponent, GARCH, Kalman Filters, Ornstien Unlehbeck]

Areas of Expertise

Risk Mitigation
Architecture Modeling
Factor Engineering
Mathematical Modeling
Low Latency Systems
Defect Tracking & Debugging
Functional Requirement

Languages

Fluent in English, Bengali, Hindi
Basic in Sanskrit, Punjabi

Awards and Hobbies

University of Cincinnati:
Dean's List and Global Scholarship of 70%

Painting:
Diploma [Ranked 3rd in State; 100th Percentile]

National Merit Search Exam:
Ranked in top 100 [98th Percentile Nationally]

Relevant Coursework:

- **Maths:** Calculus II, Linear Algebra, Statistics and Probability
- **Computer Science:**
  - Computer Systems
  - Data Structures
  - Information Security
  - Discrete Structures
  - Programming Languages
  - Design & Analysis of Algorithms
  - Database Design
  - Software Engineering
  - AI Principles and Application
  - Operating Systems
  - Computer Networks

Work Experience

Infinera, Sunnyvale, CA **2019 – Present**

Firmware Engineer, 2021

Developed and implemented software for industry-specific applications and systems. Prepared reports on projects and features.

- Designed debug tools and features such as Thread Names for each process within DVT project, Auto-config capabilities for MAKEFILE, and MAKEFILE dependencies restructuring, which resulted in 25% faster compilation.
- Improved Jenkins regression tasks for a more efficient and future-proof along with added features like NXP integration, through declarative programming
- Identified and swiftly fixed bugs and provided clarifications related to YANG and NETCONF RFCs.
- Conducted design and code reviews and recommended improvements.
- Developed firmware algorithms to handle exceptional conditions and errors.

R&D Product Engineer, 2020

Designed data reporting modules for Performance Monitors used on Line Side Firmware Drivers (PIC Module), utilizing control loops for power balancing the optical amplifiers such as EDFA (Erbium-Doped Fiber Amplifier).

- Increased the upgrade process by 30% through optimization of the Upgrade Manager application by using upgrades filter systems to update only outdated components.
- Mitigated misreporting and delays through revamping existing SDK and DCO daemon inter-process communication.
- Improved monthly releases process by recommending more efficient changes for over five Pull Requests every week.
- Implemented Image Downloading Authentication modules to secure and reliable over-the-air upgrades.
- Enhanced data-store reporting mechanism by suggesting and integrating new YANG Data Models.

Firmware Engineer, 2019

Designed and rolled out a NETCONF application to conduct performance tests on YANG Models. Supported the DVT team to meet release deadlines by identified and resolving bugs and integration issues.

- Designed and delivered ECDSA encryption module for safe booting and upgrading.
- Created and deployed required firmware modules for FPGA used in certain interdependent projects within DCO.
- Engineered and Deployed Upgrade Manager for DCO project using the Encryption Module for a safe pull of the required binary

University of Cincinnati, Remote (OH) **2018 – Present**

Research Assistant, CEAS

Designed GUI with C++ frameworks such as Qt, ImGUI, OpenGL, and DirectX, providing an interface for the driver to record data collected for detecting shoulder drop-off on any given GPS location while the car driving at an average of 50 MPH. Authored IPC framework modules and custom driver modules for LIDAR, GPS, and Camera in C/C++. Conducted Studies and wrote and edited materials for publication and presentation
GitHub: https://github.com/mareep-raljodid/ODOT

Additional Experience & Projects

Algorithmic Trading [Coinbase API & TradingView] **2020 – Present**

Engineering indicators and strategies using MATLAB and rewriting the potential High Frequency Strategies in C++ to pair with ROQ and Coinbase API for extreme low latency order execution

- Engineered intra-day model with Sharpe Ratio of 3+ and lower than 1% Max Draw-down and 1.5X of B&H in MATLAB to use as signals; currently working on a GARCH approach as an ensemble extension
- Developed a C++ multi-threaded application for High Frequency strategy for pairs using multi-parameters updating concurrently (in real-time using Actors; thread + MQ) Hurst Exponent based Mean Reversion / Trend forecast and Kalman Filters to signal process [GitHub: https://github.com/mareep-raljodid/blamer3]

Other Projects:

- *Online Portfolio: https://github.com/mareep-raljodid/mareep-raljodid.github.io*
- *Sign Language Interpreter: https://github.com/mareep-raljodid/SignLanguage_ML*
- *C++ Games (Chess, Zork-like Story etc): https://github.com/mareep-raljodid/CPP-Games*