

Alan Darmasaputra

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Work Experience

Distributed System Engineer @ Actyx AG (February 2023 - Present)

- Design, build, and maintain *machine-runner*, a distributed state machines library for TypeScript; a high-level computation model on top of Actyx's event log for local-first applications. This includes an API/DSL that maps behavioral typing with TypeScript's type system. Co-author paper "Behaviorally Typed State Machines in TypeScript for Heterogeneous Swarms" <https://arxiv.org/abs/2306.09068>
- Maintain <https://github.com/Actyx/Actyx>, a Rust-based local-first distributed event database, streaming, and processing engine.

Software Engineer @ AccelByte Inc (January 2018 – February 2023)

Technical Lead of Blackbox Hub and Web (October 2020 – February 2023)

- Lead the Blackbox Hub project from zero to production-ready state used by 8+ game development studios.
- Provide technical direction for the desktop and front-end teams.
- Collaborate with designers and product owners for UX and Information Architecture
- Collaborate with other leads from adjacent teams (C++, SDK, Backend, and Frontend) to build a cohesive system and product architecture
- Write the core algorithm for concurrent downloads and the consensus algorithm for infinitely scaling the Blackbox Hub binary diffing.

Technical Lead in cloud customer team (March 2020 - October 2020)

- Direct technical aspects of a customer cloud client-facing team.
- Interface with clients to inquire about requirements and create holistic solutions that align with AccelByte's products and vision.
- Design and build custom solutions compatible with the rest of AccelByte's solutions.

Team Lead in game publishing team (March 2019 - February 2020)

- Lead the general technical full-stack aspects of AccelByte's marketplace for games and in-game items.
- Lead the development of the game Launcher and the Player Web products into the production-ready stage.
- Collaborate with the identity services team, social services team, and infrastructure team to establish the foundational processes that are still effective until at least the date of departure from the company (February 2023).

Software Engineer (January 2018 - March 2019)

- Created the prototype of AccelByte Launcher and Player Web; eventually those are used by almost all AccelByte Cloud Clients.

- Write the core algorithm for the concurrent download and co-design the binary diffing algorithm for the Launcher.
- Introduce a design pattern inspired by Rust's type system to make the project robust and quicken the feedback lifecycle.
- Lead project rewrite of Player Web following its code acquisition from a third-party developer, adhering to the aforementioned design pattern; reducing the need for manual quality assurance and regressions ten-fold.

Freelance Projects (2015 - 2017)

- Worked on full-stack projects with Java, PHP (Laravel), and NodeJS, including:
 - Shop inventory system
 - Warehouse inventory system
 - Advertisement web add-on

Study-related Projects (2014 - 2016)

- Created an HTML5 Canvas-based vertical scrolling shooter game
- Created an HTML5 Canvas-based top-down shooter with real-time combat AI
- Free-for-all online exam web app

Technical Skill

Main Expertise:

- System engineering and architecture
- Information architecture and interaction design
- Primary language: *Rust and TypeScript*

Advanced:

Distributed system, Functional Programming, Fullstack engineering, API design, CI/CD, Cloud Computing, Microservices

React, NodeJS, Tauri, Electron, Docker, NextJS, GatsbyJS, Git, Bitbucket

Experienced:

Identity, OAuth, Graph Algorithm, Graph DB, Game Engine Development, Cryptography, Project Management, FFI

C, C++, Go, SQL, Java, GraphQL, HTML, CSS

WASM, Kubernetes, Amazon Web Services (AWS), WinAPI, Redis, PostgreSQL, MongoDB, JIRA, GitLab Runner

Basic:

Shader Programming, AI, Deep Learning, LLM, Blockchain, Decentralized ID and Verifiable Credentials, Mobile Development

OpenGL, WebGL, HLSL, PHP, Python, Haskell, Solidity

Projects

Professional and proprietary:

Machine-Runner:

Programmable distributed state machine on top of replicated operations. Useful to build

Links: <https://dl.acm.org/doi/10.1145/3597926.3604917>, <https://arxiv.org/abs/2306.09068>

Blackbox Hub:

Application and service to enable game build distribution and testing for game developers. Features include: auto-update, playtests, binary distribution and patching, OS and console integrations.

See more about the BlackBox project at <https://accelbyte.io/accelbyte-development-toolkit>

BuildInfo Differ Distributed Work Queue

A consensus-based protocol to enable fault-tolerant, infinite horizontal scaling, and exactly-once task distribution for a long-running fleet of backend processors.

In this case, the protocol is used to scale concurrent and irredundant workers that generate diffs between binaries for game builds for AccelByte Launchers and Blackbox Hub. The protocol is designed to be easily integrated and business-agnostic.

Launcher and Player Website for AccelByte Cloud:

White-label game launcher and backend for game distribution and publishing services.

Features highlight:

- Game download and update with AccelByte Launcher
- Web-based marketplace for game and in-game item transactions.

See more at: <https://accelbyte.io/player-portal-launcher-patcher/>

Others in proprietary:

- (Rust) Internal tool for quickly releasing custom builds of Blackbox Hub with customizable parameters.
- (Rust) Native module for Blackbox Hub to enable communication with WinAPI
- (Rust) Run React App with changeable parameters at deploy-time with a Rust-based rewrite engine.
- (TypeScript) OpenAPI custom TypeScript code generator

Hobby Projects:

- <https://valand.dev/blog>: Technical articles and philosophical pieces
- <https://github.com/Kelerchian/installer-toolbox>
 - Collection of random tools for making self-executing archives for Windows.
- <https://github.com/Kelerchian/machine-tree>
 - Experiment to find proper API for building tree-structured hierarchical and persistent machines. Inspired by the idea of “Combining the React model and Backend/Low-level computation”
- <https://crates.io/crates/assign> (assign.rs)

Education

2013-2017 **Bachelor of Computer Science**; Universitas Kristen Duta Wacana, Yogyakarta. *GPA: 3.84/4.00.*
Thesis title: Utilizing Driver's Peripheral Interaction for Parking Space Finder Application User Interface

