Nurzhan Abdrassilov

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Education

University of California - Berkeley Aug. 2022 – May 2026

BA in Computer Science *Cumulative GPA: 3.6/4.0*

- **Relevant Coursework**: **CS189** Machine Learning, **CS162** Operating Systems and System Programming, **CS161** Computer Security, **Data100** Data Science, **Math54** Linear Algebra, **CS70** Discrete Mathematics & Probability, **CS61B** Data Structures, **CS61C** Machine Structures, **CS188** Intro to AI, **CS170** Algorithms

Skills

- **Programming Languages**: C, Rust, C++, Java, Python, Go, HTML, CSS, JavaScript, Scheme, SQL, Typescript
- **Development Tools**: Node.js, React, Supabase DB, Valgrind, Logisim, Git, Vim, Docker, Jupyter Notebook, GDB

Experience

Undergraduate Research Assistant May 2025 – Present

University of California, Berkeley

- Reviewed and summarized academic papers on **enclave security** (e.g., SGX), **rollback protection**, and **distributed consensus protocols** to inform system design decisions.
- Translated the **SLIDE deep learning benchmark** from **C++ to Rust** [GitHub] to enable integration into upcoming performance evaluations.
- Contributing to an upcoming paper on **secure, state-sharing distributed systems** running on **TEEs**, with a focus on **performance benchmarking** and **scalability analysis** under Prof. John D. Kubiatowicz.

Projects

PintOS Operating System — *C, Kernel Programming*

- Engineered a **single-core OS (PintOS)** in **C**, including comprehensive design documentation.
- Developed **interrupt handling** with **27 system calls**, enabling **context switching** and thread servicing.
- Built **multithreading support** with **thread stack allocation** and **synchronization primitives** (**locks**, **semaphores**, **condition variables**).
- Implemented **scheduling algorithms** including **FIFO**, **Round Robin**, and **Strict Priority** scheduling.

Secure File Sharing System — *Go, Cryptography*

- Designed a **secure file sharing system** with **cryptographic primitives** for authenticated storage and sharing.
- Implemented **8 core file operations** from scratch, focusing on **functionality** and **security guarantees**.

Fly.io Distributed Systems Challenges [GitHub] — *Go, Distributed Systems*

- Completed distributed systems challenges using **Go** and **Maelstrom**, focusing on **fault tolerance**, **consistency models**, and **leader-based replication**.
- Built **gossip broadcast**, **unique ID generation**, and **grow-only counters**, validated under **network partitions** and **message loss**.
- Implemented **leader-based log replication** and **totally available transactions** emphasizing **high availability** and **correctness**.
- Stress-tested implementations using **Maelstrom's failure injection** for **concurrent workloads** and **adversarial conditions**.

2D Game Engine — *Java, Algorithms, OOP*

- Implemented a **procedural 2D world generator** with **scalable, unpredictable environments**.
- Designed **interactive features** including **movement**, **customization**, **state saving/loading**, and **access-controlled rooms**.

ClubHub — *Typescript, React, Supabase DB*

- Built a fully functioning full-stack web app in a team of 4 working as a part of CalHacks 10.0 Hackathon.
- The project allows users to browse, subscribe for updates, apply and rate clubs at UC Berkeley.

AIna — *Typescript, Express.js, MongoDB Atlas, Fullstack Engineering*

- Developed an AI-driven accessibility tool that analyzes website content, including images, text, and interactive elements—to detect compliance issues and generate actionable recommendations.
- Integrated advanced machine learning techniques to provide real-time feedback, assisting developers in aligning with ADA standards and enhancing digital inclusivity.