# Shashwat Bansal

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## EDUCATION

**University of California, Berkeley** Graduation: December 2025

*Majors: Computer Science, Data Science (Linguistics emphasis), Applied Mathematics and Economics* GPA: 3.79

- **Courses**: Operating Systems, Compilers, Distributed Systems, Computer Architecture, Computer Security, Machine Learning, Deep Neural Networks, Algorithms, Probability
- **Honors**: Upsilon Pi Epsilon (UPE) Computer Science Honor Society

## SKILLS

- **Languages:** Python, TypeScript/JavaScript, Go, C/C++, Java, OCaml, SQL, Rust (basic)
- **Tools/Tech:** React, Node.js, FastAPI, PostgreSQL, MongoDB, Docker, GitHub Actions, Pandas/NumPy, Cloudflare, Twilio API
- **Focus Areas:** Full-stack engineering, AI product engineering, infra, systems programming

## PROFESSIONAL EXPERIENCE

**Software Engineer Intern | Cinesis |** *React.js, Node.js, MongoDB, Python, GitHub* May 2025 – October 2025

- Shipped end-to-end production features across React + TypeScript frontend and Node.js/MongoDB backend, improving load-search relevance and backhaul discovery by 80%.
- Streamlined GitHub Actions CI/CD workflows and reducing release cycle time by 40%.
- Built real-time integrations with Truckstop, DAT, and C.H. Robinson APIs and contributed to routing/search architecture, improving reliability under production traffic.
- Developed responsive UI systems (dark mode, adaptive panels, load table view) used by hundreds of drivers; improved engagement 150%.
- Initiated and prototyped an AI-driven calling assistant using FastAPI + Twilio, adding automated text notifications and reducing manual load-booking effort.

**Teaching Experience | UC Berkeley |** *Python, SQL, MongoDB, C, R* June 2023 – December 2025

- Support 2,000+ students across data engineering, databases, and distributed systems.
- Authored debugging guides for a Python-based traceroute and wrote an exam question on datacenter-scale routing.
- Resolved 500+ technical queries on performance, networking, SQL, and systems design.
- Improved course infrastructure (onboarding tools, queue UI) used by 1,000+ students each semester.

## PROJECTS

**Empath — AI Mental Health Companion** May 2025 – Present

- Building an AI-assisted journaling and mood companion with sentiment analysis, mood clustering, and proactive suggestions.
- Implemented React flows and FastAPI LLM endpoints for real-time behavior insights.
- Designed gamified habit tracking + calendar-linked mood trends.

**Physics-Guided Probabilistic Transformers for Medical Inference** August 2025 – December 2025

- Designed and implemented a physics-guided Transformer for amortized Bayesian inference in myocardial perfusion MRI, replacing costly voxelwise MCMC pipelines.
- Built an encoder-only Transformer with Fourier time embeddings and a Mixture Density Network (MDN) head to model irregular time-series data and output calibrated posterior uncertainty.
- Achieved MCMC-level accuracy while reducing inference time from minutes to <100ms by integrating a differentiable physics-based ODE loss to enforce physical consistency.

**Operating Systems & Distributed Systems** August 2024 – December 2024

- Implemented process management, threads, paging, and a hierarchical filesystem in a Unix-like PintOS kernel.
- Added a custom malloc/free allocator for user programs under tight constraints.
- Built a fault-tolerant MapReduce framework with distributed workers, concurrency coordination, and crash recovery.

## ACTIVITIES

**Course Coordinator & Mentor | Computer Science Mentors** August 2023 – Present

- Lead weekly sections on algorithms/systems; 4.8/5 effectiveness rating.
- Manage mentor onboarding, training, and curriculum development for 100+ students.