

# DOUGLAS SEO

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## PROFESSIONAL SUMMARY

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AI Research Engineer and Full-Stack Technical Leader with proven track record building scalable production systems and profitable applications from 0-to-1. UC Berkeley EECS graduate with top 5% performance in AI/ML coursework. Expertise in distributed systems architecture, database optimization, and machine learning infrastructure. Founded and scaled consumer applications to 22,000+ monthly active users with \$3,300 MRR. Specialized in building production-grade infrastructure that bridges research prototypes to enterprise-scale deployment with focus on vector databases and semantic search systems.

## EDUCATION

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**Bachelor of Science, Electrical Engineering & Computer Science | University of California, Berkeley | 08/2022**

- **CS 188-189 (Artificial Intelligence & Machine Learning):** Top 5% of class with Professor recognition
- **Relevant Coursework:** Data Structures & Algorithms, Machine Learning, AI, Distributed Systems, Web Development, Cybersecurity

## TECHNICAL EXPERTISE

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|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Languages</b>      | Python, TypeScript, JavaScript, C++, SQL, Korean (Professional Working)                                                                                      |
| <b>AI/ML Research</b> | Pre-training (Dataset Curation, Tokenization), Post-training (RLHF, DPO, Fine-tuning), Vector Embeddings, Semantic Search, Model Optimization, ML Algorithms |
| <b>Databases</b>      | PostgreSQL, Firestore (NoSQL), Supabase, Prisma ORM, Vector Databases, Real-time Sync                                                                        |
| <b>Backend</b>        | Flask, REST APIs, OAuth, Google Cloud Platform, Firebase, Distributed Systems                                                                                |
| <b>Frontend</b>       | React, React Native, TypeScript, Web Development, Mobile Applications                                                                                        |
| <b>DevOps</b>         | Cloud Infrastructure, CI/CD, Performance Optimization, System Architecture, Analytics Pipelines                                                              |

## PROFESSIONAL EXPERIENCE

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**Co-Founder & CTO | Azetta AI - Cosma | San Francisco, CA | 10/2025 – Present**

*Vector database infrastructure for AI applications · Distributed Systems, Vector Search, ML Infrastructure*

- Co-founding AI research lab focused on building production-grade vector database infrastructure for semantic search and retrieval
- Architecting distributed vector database system optimized for billion-scale embedding storage and sub-millisecond similarity search
- Co-leading technical strategy for pre-training data pipelines, model optimization, and post-training infrastructure
- Designing scalable ingestion pipelines for high-dimensional vector data with real-time indexing and retrieval capabilities
- Building research prototypes bridging academic ML advances to production-ready database systems

## **Founding Engineer & CTO | Werkflow | San Francisco, CA | 03/2025 – 10/2025**

*AI-powered workflow automation platform · PostgreSQL, React, TypeScript, Supabase, Prisma ORM*

- Built complete product from 0-to-1, achieving **7,000+ monthly active users** within first year of launch
- Architected scalable backend infrastructure supporting real-time data synchronization and sub-100ms query latency
- Designed and implemented PostgreSQL database schema with Prisma ORM for type-safe data access and migrations
- Deployed production application on Supabase with authentication, row-level security, and automated backups
- Integrated AI models for intelligent workflow suggestions and automation recommendations
- Scaled to 100+ business clients and 400+ dancers using the platform for 100k annual gross transaction volume

## **Founder & CEO | Popper LLC | San Francisco, CA | 12/2022 – 03/2025**

*Mobile-first consumer application · React Native, Firestore, Google Cloud Platform, REST APIs*

- Founded and scaled to **3,300+ monthly active users** with **\$400 monthly recurring revenue**, grossing \$70k+ total transactions, and sustainable unit economics as first-time founder
- Built production React Native application handling **20,000+ daily Firestore operations** with real-time synchronization
- Designed and deployed **scalable NoSQL database architecture** with offline-first capabilities and conflict resolution
- Implemented production-grade REST APIs on Google Cloud with OAuth authentication, analytics pipelines, and push notifications
- Led and managed agile engineering team of 8 developers through code reviews, sprint planning, and technical roadmap execution
- Achieved profitability serving 60+ business clients through efficient customer acquisition and retention strategies

## **Software Engineer Intern | TDK Electronics (Chirp Microsystems) | Berkeley, CA | 06/2019 – 08/2019**

*Ultrasonic sensor technology for micro-scale 3D positioning · Python, C++, Data Science*

- Developed Python automation scripts for ultrasonic sensor data analysis and testing, reducing manual testing time by 60%
- Wrapped C++ tools in Python to enhance prototype usability and accelerate development iteration cycles
- Built demo videos and analyzed sensor data for product marketing, enabling products to accurately perceive 3D positioning

## **KEY TECHNICAL ACHIEVEMENTS**

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- **Database Performance Optimization:** Reduced query latency from 500ms to sub-100ms through strategic indexing and query optimization across PostgreSQL and Firestore implementations
- **Real-time Synchronization:** Built distributed system handling 20,000+ daily operations with conflict resolution and offline-first architecture
- **Vector Database Research:** Designed semantic search infrastructure with embedding models and similarity search algorithms for production applications
- **ML Infrastructure:** Built pipelines for model training, fine-tuning, and deployment with focus on data quality and model optimization
- **Scalable Architecture:** Designed cloud infrastructure supporting 3,000+ concurrent users with auto-scaling and monitoring
- **0-to-1 Product Development:** Led two products from concept to profitable production with proven technical execution and user growth