# ROBERT LONG

## Software Engineer

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## SUMMARY

I bring 10+ years of experience in full-stack development and cloud architecture, now dedicated to building resilient systems and automating reliability. My focus lies at the intersection of **performance and stability**, with a deep interest in **High-Performance Computing (HPC)** concepts as a method to reduce overhead and optimize system behavior at scale. I am a **collaborative team player** and a **lifelong learner**, looking to apply a rigorous engineering mindset to large-scale reliability challenges.

## EXPERIENCE

**08/2021 - 12/2025**

Irvine, CA

### Senior Software Engineer

**Cotality AutomatIQ FactCheck**

FactCheck innovates mortgage underwriting through advanced automation. The platform orchestrates specialized AI models to process high-volume, delivering industry-leading accuracy for complex income calculations.

**Platform Tooling & Traffic Engineering**

▪ Traffic Simulation Control Plane: Engineered a **cross-platform application** that routed 60k+ documents and replayed production traffic to lower environments. This tool served as the central nervous system for validating the new event-driven architecture, independent of legacy uptime.
▪ Zero-Touch ML Training: Invented a feature enabling admins to selectively route massive datasets into Computer Vision engines, accelerating the process by 7 months and eliminating manual curation labor.
▪ Strategic Execution: Developed a proprietary 24/7 AI process and demoed the proof-of-concept to executive leadership, securing **immediate buy-in** to pivot the organization's strategy. This initiative achieved **70% full automation** and reduced processing latency by **98% (90min → 7min)**.

**Architected & Delivered Critical 3rd-Party Integration** (in 2 Months vs 1 Year expected)

▪ Stateful Assembly Engine**:** Engineered a complex asynchronous reconciliation engine capable of stitching non-sequential "dangling" pages into parent documents over days/weeks. This solution achieved **90% tax coverage** and significantly compressed the delivery timeline
▪ Offline Testability**:** Decoupled legacy monoliths into isolated, offline-testable modules. This architectural shift reduced troubleshooting lifecycles from days to minutes, saving **4+ hours per debugging cycle**.

**Infrastructure & Modernization**

▪ Cost & Scalability: Engineered a high-throughput classification system using Tesseract OCR to unlock Simple Wage Loan (SWE) processing—previously impossible on the legacy system—maintaining 100% stability under high volumes.
▪ Cloud Tech: Migrated 11 microservices (PCF → Anthos/K8s) and upgraded 10 core services (.NET 3.1 → .NET 6), reducing infrastructure costs while enabling multi-cloud agility.
▪ 99.8% Uptime: Re-architected a critical legacy integration from file-based transfers to a transactional, event-driven API system, achieving 99.8% uptime via automated replayability and dynamic failover routing.

**10/2020 - Present**

Remote

### Software Engineer (Retained as Consultant)

**Pitzer College**

- Served as a technical advisor for critical infrastructure, resolving complex issues for Registrars, IT, Financial Aid Services, and the Application & Support Team to ensure business continuity during the remote transition
- Achieved an exceptional 99.8% system uptime by implementing advanced monitoring tools and proactive maintenance procedures, ensuring seamless operations and virtually eliminating downtime.
- Developed a robust automated user account management system integrating Active Directory (AD), Workday, and CX, streamlining the onboarding process for HR and IT. This automated account creation for incoming staff and students, reducing account setup time by 80% and boosting operational efficiency.

**09/2016 - 10/2020**

Claremont, CA

### Software Engineer

**Pitzer College**

- Architected and delivered a housing assignment app using Golang and Angular, replacing legacy manual processes with an interactive, visual mapping system for student residence selection.
- Designed and built a Real-Time Observability System in Go using WebSockets. Enabled live traffic monitoring to identify hotspots and bottlenecks during high-load registration events, directly informing capacity planning decisions.
- Engineered and implemented custom applications and systems to solve problems for staff, faculty, and students, based on requirements gathered through collaboration with managers and directors, boosting operational efficiency across departments.
- Eliminated critical system outages that previously halted the registration systems of all five Claremont Colleges during peak enrollment, preventing thousands of students from registering for classes. By carefully identifying the software issue that caused the database to run out of available connections, and thoroughly refactoring the code for simplicity and efficiency, I eliminated the downtime. This improvement had a positive impact on students, faculty, and registrars.
- Maintained, troubleshot, and traced issues on the student portal related to Jenzabar, utilizing Linux Bash, Perl, Java, and Informix. Ensured seamless and uninterrupted access for thousands of users.
- Transformed paper-based processes by creating electronic form solutions using Angular, Python, and C#, reducing processing times from weeks or months to hours or days. Achieved a 96.7% engagement rate and made the data collected available across all departments.
- Developed over 8 custom application solutions using C# and Python, enhancing efficiency for Registrars, IT, HR, and Financial Aid Services, Students, and Faculties

## EXPERIENCE

**10/2020 - 08/2021**

Anaheim, CA

### Software Engineer

**Extron**

- **Engineered a core shared .NET WPF** library adopted by 2 major teams and used by 5 products, standardizing critical patterns that reduced boilerplate and accelerated feature delivery for flagship applications like Global Configurator Pro and Global Scripter.
- Enhanced internal tools, boosting productivity for both the engineering and product development teams.

**05/2014 - 02/2015**

Glendale, CA

### Software Engineer

**ECN2 Technologies, LLC**

A trading platform that empowers users to trade financial instruments efficiently. It offers customizable tools and seamless connectivity to multiple trading destinations, greatly enhancing the trading experience.

- **Developed a high-frequency WPF trading platform** with advanced UI controls, reducing interface load times by 400% and accelerating data retrieval by 30% via RESTful APIs to MongoDB and SQL Server, enhancing user trading efficiency.

## INDEPENDENT WORKS

### Research & Sabbatical

01/2026 - Present

After a decade of building professional software, I chose to take a step back to deepen my technical understanding and pursue the engineering challenges that truly excite me.

⚡ HPC & System Design Exploring deep-system design to write cleaner, more effective code by understanding the systems underneath it. My focus is on advanced memory management, RAII patterns, compiler optimizations, and mitigating the impact of garbage collector (gc) pauses. I recently published findings on **undocumented .NET CLR behavior**, demonstrating how recursive DFS patterns can leverage Tail Call Optimization to achieve **2 billion stack frames**—beating the performance of traditional iterative approaches. Link: https://rbtlong.com/blog

⚡LLM & AI: I am exploring the limits of AI in production, studying transformers and how to effectively utilize AI orchestration for production purposes. I am applying much of this research directly to my project, Aisthully.

### Aisthully.com

09/2025 - Present

**Cross-Platform Architecture (.NET MAUI):** Re-architecting an 11-year open-source foundation into a commercial mobile ecosystem (iOS/Android). Currently in active development, the system features a 24/7 adaptive AI tutor that processes real-time user performance metrics

▪ *Zero-to-One Execution:* Successfully bootstrapped a live pilot community of *66+ members in just 2 weeks* (and growing daily). This active user base provides a real-time feedback loop to validate AI requirements prior to full commercial deployment. Community Link: https://www.facebook.com/groups/aisthully

▪ Tech Stack: C#, .NET 10, Maui, GCP, Kubernetes & Buildpacks

## EDUCATION

**09/2013 - 06/2016**

### Bachelor of Science, Computer Science

**UC Irvine**

## SKILLS

### Language & Frameworks

**C#** | **.Net 6+** | **XAML** | **HTML5** | **ECMA 6+ (JavaScript)** | **Python 3** | **Java** | **React** | **Perl (CGI)** | **Golang** | **CSS 3**

**C++** | **C** | **Angular (TypeScript)** | **React (TSX)** | **Linq** | **SQL** | **Reactive Extensions (RX)** | **WPF / Maui** | **htmx**

### Platforms and Paradigms

**Google Cloud Platform (GCP)** | **Pivotal Cloud Foundry (PCF)** | **Amazon Cloud Service (AWS)** | **Redis** | **Google DocumentAI**

**TesseractOCR** | **Kubernetes (K8)** | **Postgres** | **Jenkins** | **Docker** | **Google Gemini (Gen AI)** | **Web Sockets**

**Linux (Ubuntu/CentOS)** | **VIM** | **Git** | **Bash** | **ldap3** | **Informix** | **Test Driven Development (TDD)**

**Object-Oriented Programming (OOP)** | **Functional Programming (FP)** | **Restful Design** | **Reactive Programming**

**Microservices** | **Event-Driven Design** | **Declarative Programming** | **Cross-platform Development**