Doug Kiely
Orlando, FL | Space Coast
Cupertino, CA | Silicon Valley

Senior Software Engineer
https://linkedin.com/in/dougkiely
https://dougkiely.com
resume@dougkiely.com

Senior Software Engineer with experience developing cutting-edge technologies alongside engineers, founders and executives at startups and IPO-stage companies to large-scale global enterprises.

- C++ programming (C++11, 14, 17, 20, 23, 26), including object-oriented, template meta-programming, concepts
- Low-level, high-level and low-latency programming, large-scale project and cross-platform development
- Systems programming, multithreaded, asynchronous, concurrency, atomics, barriers, lock-free/wait-free, coroutines
- Network programming, including IP, TCP, UDP, HTTP, HTTPS, DNS, POSIX, Berkeley sockets
- Security protocol implementation, including SSL/TLS, cryptography, PKI, encryption and authentication
- Android development, low-level AOSP to high-level SDK, using Kotlin, Java and C++, from Android 2 to Android 16
- Cloud architecture, development, and deployment, including AWS, Azure, GCP, Kubernetes, Terraform, Vault
- DevOps using GitLab CI/CD, including container deployment to cloud services, and Git for version control

Programming Languages: C++11, 14, 17, 20, 23, 26 | C++98, 03 | C | Kotlin | Java | JavaScript | Python | Bash/Shell scripting

Operating Systems: Linux | Unix | Android | AOSP | Windows | 32-bit/64-bit

Android: Android 2 (Eclair) – Android 16 (Baklava) | SDK | NDK | AOSP | HAL | AIDL | Android Studio | Kotlin | Java | C++

Development Tools: Visual Studio | Visual C++ | Android Studio | IntelliJ | Vim | Valgrind | GCC/G++ | Clang/Clang++

Web: JavaScript | HTML5 | CSS3 | Reactive Web Design | WebAssembly | Mobile | Desktop | Apache

Networking: Linux | Windows | Android | IP | TCP | UDP | HTTP | QUIC | RTSP | SMTP | DNS | POSIX | Windows Sockets

Cloud: AWS | Azure | GCP | Kubernetes | Terraform | Hashicorp Enterprise Vault | Calico | Prometheus | Grafana

Cryptography: Public/Private Keys | Symmetric/Asymmetric | OpenSSL | AES | RSA | HMAC | SHA | TLS | PKI | X.509 | OAuth

Artificial Intelligence: Reinforcement Learning, Agentic AI, Agents, MCP, A2A

Professional Work Experience

Senior Software Engineer, Android Development, Cloud Architect, Systems Programming
Device Intelligence and Analytics | Location Intelligence
Concentrix Corp – **Newark, CA (09/21-12/25)**

Developed C++, C, Kotlin and Java software for Android mobile phones and Linux cloud-based servers

- Developed Android system-level apps in Kotlin, Java and C++ using Android Studio, AOSP, HAL, AIDL, SDK, NDK, JNI, Clang++
- Developed Android applications, modules and libraries using modern Android concurrency features, including Kotlin coroutines, lock-free atomics, latches/barriers and semaphores to improve performance and scalability
- Developed Android app to measure latency, throughput of Cellular, Wi-Fi, Satellite networks, including binding to carrier signed APKs
- Developed lock-free Linux server code using C++ and GCC/G++
- Developed asynchronous TCP/UDP networking libraries in C++ for Android and Linux, to measure the latency and active throughput of 5G cellular networks, using asynchronous networking APIs, thread barriers and lock-free atomics
- Developed DNS client based on Berkeley sockets, BIND and C/C++ cross-platform code and libraries for Android and Linux
- Implemented cryptography standards, using symmetric private keys, public/private asymmetric keys, hashing and secure transport protocols, including AES, HMAC, SHA, TLS/SSL, PKI, X.509 Certificates, QR Codes to authenticate user devices and protect data on mobile devices and secure data transported over cloud services, cellular, 5G Virtualized Networks, SpaceX Starlink satellite networks
- Implemented HTTP protocol support with OAuth-based authentication and AWS S3 integration using Kotlin, C++ and libcurl, to perform secure content delivery at scale to Android devices
- Implemented networking support, including developing code and configuring TCP/UDP/DNS/HTTP clients/servers
- Configured CI/CD build infrastructure and pipelines using GCC, Clang, Android SDK/NDK, Gradle, CMake, YAML, GitLab CI/CD
- Architected, engineered, and deployed cloud infrastructure across AWS, Azure, and GCP, leveraging Kubernetes, Terraform, Hashicorp Enterprise Vault, Calico L3/L4, service mesh network and OCI containers to support scalable, fault-tolerant services
- Designed load balancing solutions (including Layer-3 Gateway, Layer 3/4 Network, Layer-7 Application Load-Balancers, DNS load distribution based on lowest latency) to optimize TCP/UDP traffic distribution and ensure high availability of cloud applications to millions of mobile devices, including performing orchestrated DDoS attacks of cloud infrastructure over a production 5G cellular network
- Deployed code in environments with automated agent scanning of end-point devices with zero-trust infrastructure models to support 5G cellular network operations, including migrating from perimeter-based restriction to zero-trust identity/capability-based access
- Implemented tracing and observability of API calls using OpenTelemetry, Prometheus and Grafana
- Researched, patented and developed code to detect if the location of a mobile device is inside or outside, and which floor, of a building

Senior Software Engineer, Sony Electronics
Android Development, Systems Programming
Sony – San Jose, CA (2/10-5/14)
Developed C/C++ code for Android platforms; and C/C++/Java code for consumer electronic devices, including multiple mobile phone and tablet devices, across multiple Android platform versions starting from Android 2 (Eclair)

- Developed OS-adjacent system software, hardware-aware services, and optimized performance-critical code and memory usage in C/C++ to support the modernization of media content platforms
- Developed C/C++ cross-platform code for Linux, Windows and Android using Clang, GCC/GDB and Visual C++
- Developed Java code using Android Studio, Eclipse IDE, Android SDK, AOSP, HAL, AIDL/Binder, C/C++ using Clang, Android NDK, JNI
- Developed HTTP protocol support for authentication and downloading of content to consumer devices
- Developed RESTful client-side API Cloud support with HTTP, XML, OAuth
- Developed security and encryption code, using symmetric private keys, public/private asymmetric keys, hashing and secure transport protocols, including AES, HMAC, SHA, TLS/SSL, PKI, X.509 Certificates
- Developed synchronous/asynchronous code on FreeBSD-based embedded operating system
- Developed asynchronous HTTP client code supporting OAuth secure protocol signature authentication
- Developed code to integrate Digital Rights Management (DRM) of media and gaming content, including network-based DRM services
- Android, Linux, Windows build system configuration, including Android AOSP, HAL, NDK/SDK support, using CMake, Makefiles

Senior Software Engineer, Video Content Platform Business Unit
Cisco Systems, Inc. – San Jose, CA (9/06-10/09)
Developed C/C++ software for clustered video and content streaming network and storage devices used by domestic and international MSO's, including cable and telecommunications companies for next-generation video delivery, including RF and IPTV based systems

- Developed reusable, multithreaded, synchronous/asynchronous, lock-free C/C++ code, including asynchronous TCP/IP and HTTP client/server network protocol stacks as C++ class/template libraries, on Linux-based MPEG video streaming/vault clustering servers
- Developed software for Video On-Demand (VOD) and Network Digital Video Recorder (DVR) interfaces
- Developed Targeted Advertising/Addressable Advertising software, requiring coordinated development activities with marketing, including major trade shows (Cable Show, Cable-Tec, SCTE, CableLabs) and vendor integration and demonstration projects for large MSO's (including Comcast, Time Warner, Cablevision, AT&T, Verizon)
- Linux build system configuration, including creation of installable RPMs and distributable SDK
- Rack and equipment configuration, including Cisco video streaming and vault devices, Cisco routers/switches, Cisco load-balance/fail-over cards/devices, Cisco Virtualization servers, Scientific-Atlanta MPEG linear splicing devices and Linux servers

Software Engineer, Systems Programming, Distributed Computing
Arroyo Video Solutions, Inc. – Pleasanton, CA (5/04-09/06)
Developed C/C++ software for a start-up Video Streaming, Networking and Storage server company developing next-generation MPEG streaming servers, content networking and content storage vaults funded by venture capital

- Developed reusable, multithreaded, lock-free, server-side C/C++ code on clustered Linux devices, including TCP/IP and HTTP client/server network protocol stacks for video storage vaults
- Developed and programmed a file system interface module for an MPEG content storage vault cluster used for transferring video content, including support for failover and load balancing content transfers among multiple vaults, including over satellite networks
- Developed and programmed lock-free message processing algorithm for cluster communication and distributed processing
- Developed and programmed network-based interface for the live recording of content in the first Network-based DVR (NPVR/RS-DVR) system used by MSO, cable, and telecom companies (first deployed by Cablevision)

Senior Software Engineer, Technical Lead, Lead Architect
On Command Video Corporation, R&D – San Jose, CA (7/00-4/04)
Developed and designed Video On-Demand (VOD) technologies, including as Lead Architect, Technical Lead and Lead Programmer

- Developed software using C/C++, JavaScript, Delphi/Object Pascal
- Implemented VOD systems with Internet standard protocols including TCP/IP, HTTP, SMTP, XML, XSL, HTML and MPEG video/audio
- Lead Architect, Technical Lead and Lead Programmer of patented interactive TV menu navigation system used in hundreds of VOD system sites and a half-million dedicated televisions
- Developed multithreaded server-side C/C++ code using Visual C++, Borland C++ on Windows; Kylix, GNU GCC on Linux
- Developed client-side applications using JavaScript, DHTML, CSS. XML (AJAX), including cross-platform browser code support
- Operating systems utilized for development included Windows 98/NT/2000/XP, Linux

Software Engineer, Network Software Development
AT&T/Paradyne Networks, Inc., R&D – Tampa Bay, FL (6/98-7/00)

Developed NMS (Network Management System) software for Frame-Relay, ATM (Asynchronous Transfer Mode), DSL (Digital Subscriber Line), and IP (Internet Protocol) networks for Domestic and International NSPs (Network Service Providers) and Telecommunication companies as critical systems in Network Operations Centers (NOC)

- Developed software to analyze the performance of Data and Voice networks and networking devices
- Developed LDAP-enabled directory applications using OpenLDAP, including migrating existing data to LDAP schemas
- Various networking protocols and technologies used during development, including Frame-Relay, ATM, DSL, and Internet standard protocols including IP, TCP, HTTP, LDAP, SNMP and FTP
- Operating systems and platforms utilized for development include several flavors of Unix and Windows, including Sun Solaris, HP-UX, IBM AIX, Linux, Windows NT; Netscape and Microsoft web browsers; Oracle and Sybase SQL databases; OpenLDAP directory and Apache web servers

Software Developer, Storage Device Programming
Integrated Network Solutions, Inc. – Irvine, CA (6/97-6/98)
Programmed CD-R recording devices using low-level APIs with C++, including standard SCSI commands and proprietary CD-R interfaces. Developed multithreaded, 32-bit object-oriented class library APIs used for the implementation of high-level CD-R recording software

- Reverse engineered CD (compact disc) standards, including Redbook audio and Yellowbook data formats
- Developed high-performance, optimized library APIs using memory-management algorithms, including parallel multi-CD duplication
- Developed object-oriented library supporting code re-use, and extensibility for future storage devices like DVD and video data formats
- Standard Optical Storage devices supported included SCSI-1, SCSI5-2, SCSI-3 and IDE

Education:

De Anza College – Computer Science – A.A. Degree Credits – 4.0 GPA
Spring 2023 – Winter 2025

- Programming Methodologies in C++ 1, 2
- Data Abstraction and Structures with C++
- Advanced C++
- Intel x86 Processor Assembly Language and Computer Architecture
- Italian 1, 2 ,3

Continued studies in Computer Science and Software Engineering

Awards:

President's Honor List Awards – 4.0 GPA

- June 16, 1994
- August 10, 1994
- January 25, 1995

Patents:

Indoor-Outdoor Detection by Smartphone without using GPS Information
U.S. Patent (Allowed Jan. 9, 2026, Number Pending): Application No. 18/235282

Systems and methods are provided for determining that the device is not reporting precise location information, based on output from one or more sensors determining that the device is located indoors and determining the altitude of the device. Based on the determination that the device is located indoors, suspending precise location services until it is determined that the device is back outdoors.

Item Selection and Methods of Displaying the Same
Published Patent Application: CA2487398A1

Developed an innovative interface method for hierarchical item selection and dynamic display rendering, contributing to early UX patterns for interactive media systems. The invention was published across multiple jurisdictions, including Canada, the United States, Europe, and Australia, establishing prior art in menu-navigation and content-selection frameworks.

Future Interests:

Reinforcement Learning, AI, AAA Games, Embedded, Distributed Systems, Robotics, NLP, Quantum Computing

Projects:

C++ Gym for Reinforcement Learning

Modern C++ implementation of OpenAI Gym, designed to bring reinforcement learning environments, that support industry standard C++ Machine Learning and Deep Learning libraries, tools and workflows, to C++ developers.
GitHub: https://github.com/dougkiely/cppgym

Agentic AI Platform and Libraries

Currently researching, designing and implementing a modern C++ implementation of Agentic AI Agent orchestration using C++20/23/26 features, including support for MCP and A2A protocols, as a high-performance distributed system with reduced power and memory consumption, and integration of zero-trust security models, governance and API gateways.