

David M. Rector

Senior Software Engineer — Simulation & Cross-Platform Systems

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Professional Summary

Senior software engineer with extensive experience building simulation systems and cross-platform products across Windows, macOS, iOS, Android, and web. Creator of a widely used mechanical CAD simulator and lead developer on enterprise mobile applications. Strong background in performance-critical systems, native Swift and C#, client/server architectures, and applied AI integration. Known for owning complex products end-to-end, from architecture through shipping and long-term maintenance.

Core Technical Skills

- Simulation systems & kinematic modeling
- Cross-platform application development (Windows, macOS, iOS, Android, Web)
- Swift (AppKit/Cocoa), C#, C++, Java
- Client/server systems (Java, Tomcat)
- Performance optimization & algorithm design
- Applied AI integration (speech → structured data workflows)
- UI/UX design for technical applications
- Distributed processing & IPC
- Mapping, GPS, audio/video capture

Featured Personal Project

Linkage Mechanism Designer & Simulator (2000–Present)

Creator and sole developer of a CAD application used worldwide for 2D mechanical linkage design and real-time simulation. www.linkagesimulator.com

- Designed custom kinematic solver with precomputed dependency graphs for fast interactive simulation
- Implemented real-time animation of mechanical systems during design
- Shipped production Windows application with global user base
- Currently developing native Swift macOS version
- Full product ownership: architecture, simulation engine, UI, tooling, and distribution
- Used by hobbyists, educators, and engineers internationally

Professional Experience

Senior Software Developer

Westlake Software, Inc. — Calabasas, CA (Remote) | 2012–Present

- Lead engineer on mobile workforce platform spanning iOS, Android, Windows UWP, and Web
- Built iOS client from scratch, implementing full feature parity with existing platforms
- Maintain and enhance Java/Tomcat backend services
- Implemented AI-assisted speech-to-form automation, converting spoken input into structured inspection data
- Integrated mapping, GPS tracking, routing, and audio/video/still image capture
- Platform used by distributed field teams supporting a major global technology company and large outdoor/airport advertising firms for retail audits, inspections, and installation workflows
- Investigate and prototype new technologies to improve client-side workflows and data collection

Senior Software Engineer

Active Motif / TimeLogic Corporation — Carlsbad, CA (Remote) | 1997–2015

- Developed high-performance data comparison tools for biotechnology applications
- Built bioinformatics tooling used by leading genomics researchers for large-scale sequence analysis and annotation
- Designed and implemented Windows device drivers for custom accelerator hardware
- Created distributed job-processing mechanisms across multiple machines
- Optimized core comparison algorithms for large datasets
- Participated in Windows NT development and Unix port
- Led and mentored developers on multiple engineering projects

Earlier Career (Summary)

Early career focused on multimedia systems, embedded software, device drivers, proprietary file systems, and communications systems. Roles included senior engineer and cofounder positions working on non-linear video editing, digital video playback, and hardware-integrated software platforms. Details available upon request.

Additional Projects & Writing

- Various personal software projects documented at: blog.rectorsquid.com/programming-projects
- Artistic and mechanical projects documented at: blog.rectorsquid.com/art-projects