

Morgan K Davis

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SUMMARY

Hands-on software engineer with experience in performance optimization, exploratory prototyping, and commercial software delivery. Built and sold independent products, developed interactive prototypes in a multidisciplinary innovation group, and led engineering teams while remaining directly involved in implementation. Current work centers on Avara3D, an independent C++ real-time 3D rendering and simulation engine.

INDEPENDENT ENGINEERING PROJECT

Avara3D – Creator and Developer | [avara3d.net](#) | Ongoing

- Designed and implemented a real-time 3D visualization and simulation engine with a scene-oriented C++20 API, integrating OpenGL rendering and Bullet rigid-body physics.
- Designed a staged rendering pipeline separating scene gathering, draw-packet generation, and backend execution.
- Built runtime performance and diagnostic tooling, including CPU/GPU timing, memory-usage statistics, and debug visualization.
- Developed a CMake-based build system and implemented an automated CI pipeline for Linux, macOS, Windows, and WebAssembly/Emscripten.
- Implemented fixed-step simulation decoupled from host updates and rendering.

PROFESSIONAL EXPERIENCE

Temporary, Part-Time Software Engineer, Turtle Beach Inc. | Feb 2024 - Jun 2026

- Contributed feature and maintenance work to existing mobile (.NET MAUI/C#) and desktop (C++/C#) applications.
- Led cross-platform firmware-update integration, developing integration modules, validating the end-to-end process, and working with the firmware SDK vendor to resolve issues.
- Maintained and improved the existing BLE firmware implementation.
- Built a working Flutter/Dart companion-app prototype with task-graph execution, BLE discovery and connection, and settings exchange with flight-simulation products.

Career Break | Sept 2022 - Feb 2024

Planned career break for personal interests and independent technical work, including Avara3D.

Principal Software Engineer, Turtle Beach Inc. | Feb 2020 - Sept 2022

- Established a unified C#/Xamarin codebase for iOS, Android, and Windows, delivering multiple milestone releases that substantially improved the quality and polish of the company's software.
- Led a seven-person cross-functional team comprising four software engineers, two QA, and one designer; owned software architecture and remained hands-on in implementation, code review, and mentoring.
- Worked closely with engineering, product management, and key stakeholders to define requirements, deliverables, and release schedules.

Consulting Software Engineer, Turtle Beach Inc. | Jun 2018 - Feb 2020

- Led companion app development across in-house and offshore teams.
- Developed and maintained existing iOS, Android, Windows, and macOS applications, delivering multiple on-time product releases.

Senior Software Engineer, Innovation/PLT Labs, Plantronics Inc. | Oct 2016 - Jun 2018

Software Engineer, Innovation/PLT Labs, Plantronics Inc. | Oct 2012 - Oct 2016

- Led hands-on software development for Innovation & New Ventures, a multidisciplinary group exploring new ideas and technologies; contributed to feasibility studies, company strategy, and product-roadmap development.
- Developed exploratory prototypes, pilot-program software, and interactive demonstrations spanning sensor-driven interaction, real-time 3D visualization, audio/video, and location-aware systems.
- Created SDKs, reference implementations, example applications, and documentation supporting exploratory technologies and strategic partner integrations.
- Presented technical demonstrations to executives and at trade shows; introduced prototype technologies at sponsored hackathons and helped participants incorporate them into their projects.

Selected work:

- 3D head-orientation displays, retail head-tracking heatmaps, and head-controlled telepresence demonstrations.
- C++/Linux LED-matrix video playback on Raspberry Pi, including a custom video-preprocessing pipeline and status overlays.
- Sound-masking system software: Python server distributing speech-detection data to iPad visualization/configuration and Apple TV video-wall applications.
- Open-source reference SDK, example applications, and documentation for FIDO 2FA over BLE.
- Adapted the company's proprietary protocol from Bluetooth Classic to BLE, later used in production.

Software Engineer, Identity Solutions, AOptix Technologies Inc. | Jul 2011 - Oct 2012

- Ported core biometric software—including segmentation, templating, and matching algorithms—from the existing C++/Linux platform to a new iPhone hardware accessory integrating an IR iris camera and fingerprint sensor.
- Reduced iris-image segmentation time from 35 seconds to 3.5 seconds through optimization work including hand-written ARM NEON assembly.
- Developed the product's native iOS application and refactored it around a modular SDK provided to customers for integration.
- Implemented field-of-view and capture-volume mapping between the iPhone and IR cameras from optical engineering specifications.
- Prototyped live face/eye tracking with OpenCV and optimized its implementation using CoreImage.
- Built a hardware accessory simulator to enable development before hardware and firmware were ready.

Founder, MKD Software LLC | Jun 2001 - Jul 2011

- Built and sold independent Mac software products beginning at age 16 using Objective-C/Cocoa and C/Carbon.
- Owned product design, marketing, and distribution, including website development and graphics, licensing/serial-number systems, and sales/customer infrastructure.
- Created Socks (shareware; 250,000 downloads, 10,000+ registered users), iMote (freeware; 30,000+ downloads), and Pinki (freeware; 25,000+ downloads).

EDUCATION

B.S. Computer Science, 2011 – University of California, Santa Cruz