SEAN T. MCBETH

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OBJECTIVE

Creative software architect with 20-year cross-disciplinary background in Web development, database development, and VR/AR. Seeking full-time positions as a Full Stack Engineer/Technical Lead building cutting-edge products in XR, image processing, audio synthesis, artificial intelligence, and online collaboration.

PROFESSIONAL EXPERIENCE

SYSTEMS PLANNING AND ANALYSIS   06/2023 – PRESENT

SENIOR SOFTWARE ENGINEERING MANAGER

Managing development team of 5 junior developers across variety of projects in Web development and analytics support. Instituted bi-weekly training sessions for growing developer skills. Modernized development practices, improving project velocity, reducing defect rates. Provided scheduling support to program managers. Member of Software Development Corporate Advisory Board, setting company-wide standards for software development.

- **Foxglove** – Developed Web application framework with support for running ASP.NET Core apps as hybrid desktop applications, used across all projects developed within the team.
- **ESAT** – Developed novel application of Force Directed Graph Rendering for use in analyzing investment chains for economic security concerns. Project won recognition amongst top company leadership for further internal investment.
- **DORG** – Developed in-house customer relationship management tool.
- **MIMIR** – Developed custom time-series database tool for managing classified data on military weapons platforms.
- **SharePoint Development** – Modernized software development practices for delivering financial reporting, document classification tracking, and document sharing features to existing SharePoint 2016 server for the Joint Hypersonics Transition Office and Joint Munitions Program Office.

DIPLOMATIC LANGUAGE SERVICES   07/2019 – 04/2023

HEAD OF IMMERSIVE SOFTWARE DEVELOPMENT

Developed and managed immersive projects enhancing DLS' foreign language instruction services. Created DLS VR, a web-based immersive language and cultural learning application, including an online editor and student activity reports.

The project was developed in close collaboration with the Language Training Department, incorporating expert instructors and curriculum designers. The user-friendly online editor allowed non-technical subject matter experts to create immersive scenarios, while performance reports tracked student engagement. Product design process included attending a language course to gain first-hand knowledge of the student experience, implementing regular meetings with stakeholders, and surveying latest research in VR UI design.

Established VR training labs across all three DLS locations, provided training for instructors and students, and managed 35 Meta Quest 2 headsets. Involvement extended to marketing, promotion, training, conference presentations, software sales, and business partnership development. Additionally, supervised one full-time employee and mentored others within the company.

Built features supporting desktop, mobile, and VR HMD modalities. P2P multiplayer with WebRTC. Avatars conveying social presence through head and hand tracking with WebXR. Spatialized audio and complex audio graph management with WebAudio. User comfort enhancements with aggressive performance optimization, research-based UI design.

Selected as a finalist for The Language Flagship Technology Innovation Center's LaunchPad 2023 event.

DELOITTE CONSULTING	10/2017 – 06/2019

SENIOR SOFTWARE ENGINEER

Developed augmented reality applications and prototypes in fast-paced, collaborative environment.

- **Exelon AR Tower** – iOS augmented reality application showing video overlays atop large posters.
- **Deloitte University Hub** – iOS augmented reality application demonstrating IoT use cases of AR tech.
- **Hitachi IoT** – Award-winning MS HoloLens application for demonstrating IoT use cases of AR tech.
- **DCIL.Core** – Framework for building Immersive Applications supporting wide variety of hardware modalities.
- **USPS CES Demo** – Live-video, green-screening "photo booth" application.

PRIMROSE VR	07/2015 – 06/2017

FOUNDER, PRINCIPAL SOFTWARE ENGINEER

Primrose VR was the world's first JavaScript framework for developing virtual reality applications, beating Mozilla's A-Frame to market by nearly a year. Primrose provided a VR desktop metaphor and an object-oriented API for creating progressively enhanced 3D WebGL applications, supporting VR headsets, mobile devices, and standard 2D desktop interfaces.

FREELANCE SOFTWARE ENGINEER	01/2012 – 10/2017

PRINCIPAL SOFTWARE ENGINEER

Directly interfaced with clients in diverse industries to build wide variety of applications across virtual reality, augmented reality, education, GIS, computer vision, hardware prototyping, games, and teleconferencing.

- **Sparkstone** – Gear VR application for teaching multiplication tables to children.
- **LiveStocked** – Bluetooth-compatible RFID reader for tracking cattle on cattle farms.
- **Synthality** – HTC Vive tour of South Philadelphia real estate.
- **Edison Electric Institute** – HTC Vive demo advocating for "Smart City technology".
- **Podium** – WebRTC-based desktop sharing platform.
- **Haptic Glove** – Bluetooth glove device sensing hand and finger position, with vibrating motor feedback.
- **AR Business Card Prototype** – Android AR app displaying brochure information atop business card.
- **Dancing Rhythm Game Prototype** – HTC Vive rhythm game with beat-matching of energetic techno music.
- **Plume** – WebRTC-based Virtual Reality teleconferencing application.
- **VR Arcade** – Pop-up installation for playing virtual reality games, first on the East Coast. HTC Vive games and refreshments.
- **Legend3D/REX** – World's first WebVR, 360-degree real estate tour application.
- **Sibley Hospital** – Microsoft HoloLens application testing user-configurable, private spaces data in shared spaces.
- **Security Blank-It** – Computer Vision application for electronic medical record security in doctor's offices.
- **Rieker CARS** – GPS data logging and analysis portal for DOT standards-compliant road signage.

SKILLS

Project Management, Technical Lead, Full Stack Engineer, Agile Software Development, C#, TypeScript, JavaScript, HTML, CSS, SQL, Three.js, WebXR, WebGL, WebGPU, WebAudio, WebRTC, WebWorkers, WASM, Meta Quest Pro, ASP.NET Core, Entity Framework Core, PostgreSQL, Sqlite, Unity3D, Git, Linux, Windows, Azure, Cloud Computing

REFERENCES

- **Jim Bellas** (CEO/Owner, Diplomatic Language Solutions) – jbellas@dlsdc.com
- **Molly Sampson** (Director of Language Programs, Diplomatic Language Solutions) – msampson@dlsdc.com
- **Dennis Foutz** (University Consortium for Applied Hypersonics Lead, Systems Planning and Analysis) – dfoutz@spa.com

TALKS

- [CALICO Immersive Realities SIG](#) (02/2023) – Designing virtual reality scenarios for foreign language training.
- [Air University: LREC Symposium](#) (10/2022) – Designing virtual reality scenarios for foreign language training.
- Virtual Worlds Forum (11/2021) – Using WebXR to create environments for foreign language instruction.
- [UMD MAVRIC Conference 2019](#) (09/2019) – Accessibility for immersive applications
- [CDK: VR vs AR: Which Tech Will Win the Battle?](#) (05/2019) – State of the Augmented Reality market.
- [UMD MAVRIC Conference 2018](#) (10/2018) -- My experience at the [Fallingwater Immersive Design Residency](#).

EDUCATION

Shippensburg University of Pennsylvania (2002 – 2005)

B.Sc. Computer Science, *cum laude* – Upsilon Pi Epsilon (President), ACM (President), Programming Team (Vice President)