# Joseph R. Moulton

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## ---------------------------------SOFTWARE ENGINEER-----------------------------------

Detail-oriented embedded systems programmer and software architect with 5+ years experience devising innovative and tailored solutions to meet ever-changing business requirements within the fields of Sensor Modeling and Simulation and Audio Processing and Synthesis.  Advanced skill with leading programming tools complemented by proven ability to assimilate and rapidly utilize emerging technologies.  Advanced mathematic knowledge with experience developing comprehensive algorithms and DSP logic.

*Technical proficiencies include:*

**ENVIRONMENTS:**     Windows, UNIX, MAC OSX, iOS, Android

**PROGRAMMING:**     C/C++, Objective-C, Python, Java, Fortran 90, HTML/CSS, Javascript

**DEVELOPMENT:**     Embedded Systems Programming, Full-scale Application Design and Development, Object-oriented Design (OOD),Real-time Hardware Programming and Development, Real-time Graphics Rendering & Shader Composition, Digital Signal Processing (Real-Time Audio Synthesis/Processing, Real-Time Image Processing),  On-TheFly Video Capture/Encoding/Formatting/ Streaming, Networking and Real-time Messaging, Immersive Gui Design and Integration, XML, Cross –platform code development, Licensing Design, Project Management, Sales, Training, Technical Documentation

## --------------------------------PROFESSIONAL EXPERIENCE---------------------------------

**SOFTWARE ENGINEER**, 2009 to 2014, JRM Technologies

***CHIMAERA* Real-Time HWIL Scene Generator for Sensor Stimulation**

For military applications such as seeker routing algorithm development, *CHIMAERA* is a highly optimized Image Generation software application with IR sensor capabilities bundled with a finely tuned set of hardware to meet the rigorous demands of a real time application.  As project lead for this product I was personally responsible for achieving all task milestones apropos to delivery of the system from inception at contract agreement to customer acceptance and integration with partner projection and flight motion simulation (FLS) systems.

- Spec'd and purchased individual system components

- Successfully managed and implemented movement to 2nd Generation 64-bit Chimaera

- Led and procured signoff on delivery milestones for FAT (Factory Acceptance Testing), CAT (Customer Acceptance Testing), Integration, and System Training both onsite and overseas.

- Personally managed all CHIMAERA software secondary to partner's proprietary IG code:

  - Designed and maintained a comprehensive CIGI (Common Image Generator Interface) Host GUI application for remote control of IG entities, sensor, atmospherics, time of day, view control and scenario creation incorporating use of an xbox 360 controller.  GUI was created using Nokia Qt API.

- Wrote command-line applications to control and record image sequences via a hardware FrameGrabber card at nonstandard resolutions up to 200 Hz. Enhanced feature sets of existing MFC Framegrabber applications.

- Developed VMIC reflective memory software interfaces for fiber optic transmission and reception of IG messages.

- Created a windows solution graphics control program to remotely reissue the resolution and frame rate of the IG graphics card using the Nvidia nvapi.

- Maintained and managed software to control a partner custom designed I/O box for synthesis and manipulation of 16-bit HDR image sent out of IG graphics card.

**Baseline Graphics Development**

Daily programming task involved maintenance and enhancement of our baseline Sensor Simulation SDK including physics engine and image processing engine coupled into a real-time graphics application built with OpenSceneGraph/OpenGL. Notable development and skills included:

- Created a UNIX solution to remotely reissue the resolution and frame rate of the IG graphics card

- Capture graphics frame buffer to video, encode to codec of choice, save to disk or stream over network

- Responsible for all maintenance and all new features added to massive multi-panel Qt GUI tightly integrated with the graphics application as new features are added to the baseline by all developers

- Developed ScenarioSDK Crossplatform OSG Graphics library:

  - Specialized Camera and Mouse Manipulators for scenario control of 3D rendered environment

  - Specialized rendering callbacks for various purposes

- Collaborated with a colleague to develop Radar sensor rendering modes such as Synthetic Aperture Radar (SAR), Millimeter Wave (MMW) and PPI radar scan display

  - Shader composition

  - Created HUD (heads up display)

  - Hooked up rendering modes for GUI manipulation

- In-depth working knowledge of EO/IR and Radar Band Sensors


**Additional Knowledge/Expertise:**

- Embedded Systems Engineering

- Real-time Audio Processing/Synthesis

- Real-time Image Processing

- Mobile Development ( iOS, Android, Windows )

- Front End Web Development ( HTML/CSS/Javascript)

- Visual Studio, XCODE, UNIX Dev environments

- XML Application State Saving

-----------------------------------**RELEVANT EXPERIENCE**--------------------------------------

- iOS Virtual Analog Audio Synthesis/Processing Mobile Application

- iOS Room Reverb Analysis Application

- Several iOS Audio Player and Waveform Rendering Applications

------------------------------**EDUCATION & CREDENTIALS**-------------------------------------

- **Bachelor of Science in Mathematics, minor in Computer Science,** 2010

  JAMES MADISON UNIVERSITY, Harrisonburg, Virginia

-------------------------------------**REFERENCES**---------------------------------------------

**Dr. Christopher Fink, Ph.D.**

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|---|---|
| **Relationship:** | Chimaera & R&D Supervisor, Immediate Supervisor |
| **Firm:** | JRM Technologies |
| **Position:** | Senior Physicist, Executive VP |
| **Location:** | Fredericksburg, VA |
| **Email:** | chris.fink@jrmtech.com |
| **Phone:** | 540-736-8106 (Office); 540-786-0608 (Home); 540-907-1923 (Cell) |

**Kenneth George**

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|---|---|
| **Relationship:** | Core SDK Development Supervisor, Secondary Supervisor |
| **Firm:** | JRM Technologies |
| **Position:** | VP of Product Development |
| **Location:** | Salt Lake City, UT |
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