

Isla Sparks

☎ (512) 555-7318 ✉ isla.sparks@example.com 🔗 linkedin.com/example/islasparks 📍 Cedar Park, TX 78613

SUMMARY

Software Chief Architect with 22 years guiding aerospace and **embedded software** from early architecture through **certification** closure. Leads safety critical airborne programs across commercial and defense platforms, with more than 15 years using C and C++, more than 10 years developing **real time software**, and extensive Matlab and Simulink experience. Directs requirements allocation, lifecycle traceability, verification, debugging, configuration management, **hardware and software integration**, supplier assessment, and technical delivery. Applies DO 178C and LOR practices across VxWorks, Deos, and Integrity environments while aligning software decisions with system safety, hardware constraints, customer needs, and regulatory strategy. Works closely with systems, electrical, mechanical, production, support, certification, and program teams to resolve difficult issues and deliver dependable airborne products.

EXPERIENCE

Chief Software Architect, Airborne Embedded Software

January 2021 - Present

AeroVista Systems

Austin, TX

Serve as senior technical authority for airborne embedded software across commercial and defense avionics programs. Govern architecture, certification, supplier delivery, and cross functional decisions from requirements definition through closure.

- Governed airborne architecture through certification closure using **DO 178C** and LOR aligned processes
- Directed C and C++ designs across **VxWorks**, Deos, and **Integrity** RTOS environments
- Guided Matlab and Simulink development through simulation, cross compilation, and target debugging
- Established traceability, verification, **configuration management**, and **change control** across suppliers
- Resolved **hardware and software integration** issues with systems, electrical, mechanical, and safety teams

Principal Embedded Software Architect, Mission Electronics

March 2016 - December 2020

Skyward Defense Electronics

Fort Worth, TX

Owned embedded architecture for mission and flight electronics, connecting real time design, hardware integration, verification evidence, supplier performance, and controlled technical delivery.

- Defined real time interfaces and partitioning for mission electronics with disciplined **requirements traceability**
- Led **C** and **C++** reviews for specialized hardware and RTOS targets using architecture methods
- Directed verification with **test scripts**, simulations, target debugging, and **performance instrumentation**
- Integrated software with hardware and communications interfaces using **TCP/IP**, **FTP**, and **XML**
- Assessed supplier capability, capacity, statements of work, risks, and work transfer readiness

Senior Embedded Software Engineer, Flight Controls

June 2011 - February 2016

VectorFlight Technologies

Phoenix, AZ

Developed **real time software** for airborne control and monitoring functions, then assumed subsystem technical leadership across requirements, modeling, integration, verification, and delivery.

- Developed real time C and C++ software for airborne control and monitoring functions
- Built VxWorks and Integrity software informed by **Matlab** and **Simulink** control models
- Derived software requirements from system specifications and maintained lifecycle traceability
- Created **verification** procedures for timing, interfaces, robustness, and functional behavior
- Coordinated technical issues across systems, electrical, mechanical, test, and production teams

Embedded Software Engineer, Avionics Computing

July 2007 - May 2011

Redstone Avionics Labs

Huntsville, AL

Implemented **embedded software** for avionics computing equipment while supporting requirements allocation, model analysis, hardware integration, testing, configuration control, and lifecycle reviews.

- Implemented C and C++ software from allocated requirements into modular real time designs
- Developed Deos and VxWorks software using **cross compilers**, linkers, and **target debuggers**
- Created Matlab and Simulink simulations for algorithm evaluation and interface analysis
- Executed unit, integration, and system **test scripts** with traceable **verification** evidence
- Isolated timing and interface problems through instrumented **hardware and software integration** tests

Software Engineer, Real Time Products

June 2004 - June 2007

Northstar Embedded Solutions

Dallas, TX

Developed real time embedded products, translating requirements into device interfaces, control logic, diagnostics, communications functions, and controlled software releases.

- Developed C and C++ software for device interfaces, control logic, and diagnostics
- Used **Linux**, Unix, and **Windows** tools for compilation, debugging, and controlled releases
- Converted product requirements into traceable components, interfaces, and **verification** targets
- Executed bench and target testing to identify functional and performance defects
- Implemented **TCP/IP** and file transfer functions for integration and support teams

PROJECTS

Airborne Software Certification Framework 📅 2024

Unified architecture reviews, requirements traceability, verification evidence, and configuration practices across safety critical airborne programs, improving consistency through certification closure.

Real Time Hardware Integration Program 📅 2020

Connected embedded software with specialized processors, I/O devices, and communications interfaces, resolving timing and performance issues through target instrumentation.

Model Based Control Verification 📅 2015

Applied Matlab and Simulink models with desktop simulation and target execution to evaluate control behavior, interfaces, and implementation decisions.

LEADERSHIP & AWARDS

- Project Management Professional certification earned in 2018, reflecting disciplined delivery leadership across complex technical programs.
- INCOSE Certified Systems Engineering Professional earned in 2017, recognizing systems thinking across software, hardware, and certification.
- Technical authority appointed for airborne software architecture, supplier coordination, and certification closure across commercial and defense programs.

EDUCATION

Bachelor of Science in Computer Science

2004

Texas Tech University GPA: 3.5

Lubbock, TX

***Coursework:** Embedded systems, software engineering, computer architecture, mathematics*

CERTIFICATIONS

- Project Management Professional 📅 2018
- INCOSE Certified Systems Engineering Professional 📅 2017

TECHNICAL SKILLS

- **Programming Languages:** C, C++, C#, Java
- **Real Time Operating Systems:** VxWorks, Deos, Integrity RTOS
- **Model Based Engineering:** Matlab, Simulink, desktop simulation
- **Certification Standards:** DO 178C, LOR compliance, aircraft certification
- **Requirements Management:** Requirements allocation, traceability, change control
- **Verification and Testing:** Test scripts, regression testing, usability analysis
- **Build and Debug Tools:** Cross compilers, linkers, target debuggers
- **Operating Systems:** Linux, Unix, Windows
- **Communications Protocols:** TCP/IP, FTP, XML
- **Configuration Management:** Configuration baselines, release control, specification control
- **Hardware Integration:** Processors, I/O devices, specialized hardware
- **Database and Reporting:** Database engines, reporting structures, data design

SKILLS

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|-------------------------|-----------------------------|----------------------------|------------------------|
| • Software architecture | • C and C++ | • Verification | • Supplier assessment |
| • Embedded systems | • Matlab and Simulink | • Certification | • Real time software |
| • Airborne software | • VxWorks | • Hardware integration | • Technical leadership |
| • DO 178C | • Requirements traceability | • Configuration management | |

PROFESSIONAL AFFILIATIONS

- Project Management Institute, professional member supporting disciplined technical delivery and program leadership.

- International Council on Systems Engineering, professional member connecting software architecture with system safety and lifecycle practice.

LANGUAGES

- English (Native)
- Spanish (Intermediate)

ADDITIONAL INFORMATION

Work Status : Authorized to work in United States. No sponsorship required.

REFERENCES

AVAILABLE ON REQUEST