



Genesis Engineering Solutions, Inc.
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JOB TITLE: FPGA DESIGN ENGINEER, REQUISITION NUMBER#1003

About the Role:

Genesis Engineering Solutions is seeking a Space FPGA Engineer with a strong background in Xilinx FPGA development, Petalinux, and embedded systems to join its embedded team. This position will involve the design, development, and testing of FPGA-based solutions for space applications, working with NASA Core Flight Software (CFS), and collaborating with cross-disciplinary teams. The ideal candidate will have hands-on experience with Xilinx FPGA platforms, embedded systems development, and the ability to understand PCB schematics and have experience testing prototypes. Experience with NASA CFS is desirable but not required. This is a great opportunity for someone with a master's or bachelor's degree plus two years of relevant experience to contribute to space exploration projects.

KEY RESPONSIBILITIES:

FPGA Development (Xilinx Focus):

- Design, develop, and optimize FPGA-based solutions for space missions, using Xilinx FPGA tools (Vivado, ISE, Xilinx SDK).
- Write VHDL/Verilog code for implementing digital logic functions in space systems.
- Perform design verification, timing analysis, and simulations to ensure the FPGA meets mission requirements in space environments.
- Collaborate with hardware engineers to ensure that FPGA designs integrate seamlessly with other components.

Embedded Systems Development:

- Work with PetaLinux for creating embedded Linux-based solutions, managing kernel configuration, bootloader development, and custom drivers.
- Integrate embedded software with FPGA hardware to enable mission-critical functionality in space systems.
- Develop embedded firmware for microcontrollers and processors, focusing on real-time control and interfacing with space-grade hardware.
- Develop embedded software for spacecraft systems, including sensors, actuators, and communication protocols.

NASA Core Flight Software (CFS) Development:

- Develop custom NASA Core Flight Software (CFS) apps for space applications.
- Familiarity with schematics and Prototype Testing:
- Ability to understand PCB schematics to test evaluation boards as well as participate in developing prototypes, including hardware-in-the-loop (HIL) testing and other validation activities.
- Assist with debugging hardware issues on prototype boards, including FPGA and embedded system integration problems.

Testing and Validation:

- Develop and execute test plans for validating FPGA, embedded software, and Core Flight Software systems in both lab and flight-like environments.
- Conduct comprehensive hardware/software testing and verification to ensure that systems meet reliability, performance, and space qualifications (e.g., radiation tolerance).
- Perform integration testing to ensure FPGA-based hardware and software systems operate correctly within the larger spacecraft platform.

Collaboration and Documentation:

- Work with cross-functional teams, including hardware, software, and system engineers, to ensure successful system integration and project delivery.
- Produce high-quality documentation for FPGA designs, embedded software, prototype testing, and Core Flight Software to ensure traceability, compliance, and maintainability.
- Provide technical support and guidance to other teams during integration and test phases.
- Participate in code reviews and design reviews to maintain quality and consistency across the team.

QUALIFICATIONS:

Master's or Bachelor's degree in electrical engineering, computer engineering, and 2 years of relevant experience in FPGA and embedded systems development.

ELIGIBILITY:

In compliance with federal law, all persons hired will be required to verify identity and eligibility to work in the United States and to complete the required employment eligibility verification document form upon hire. Applicants must be authorized to work for ANY employer in the U.S. We are unable to sponsor or take over sponsorship of an employment Visa at this time.

LOCATION:

On-site in Lanham, MD or onsite at NASA Goddard Campus in Greenbelt (during I&T). This is mostly an on-site role as it involves testing and prototyping. Some remote work is possible based on individual projects.

EXPERIENCE:

- Proven experience in FPGA development using Xilinx tools (Vivado, ISE, Xilinx SDK), including VHDL/Verilog programming.
- Experience with PetaLinux for embedded Linux development, including kernel configuration, bootloaders, and drivers.
- Hands-on experience with embedded systems, real-time systems, and communication protocols (e.g., I2C, SPI, UART, CAN).
- Familiarity with NASA Core Flight Software (CFS) or other space mission software frameworks is desirable but not required.
- Experience with PCB schematics and prototype testing (e.g., hardware-in-the-loop testing, debugging FPGA/embedded systems).

SKILLS:

- Proficiency in VHDL/Verilog and FPGA design tools (Vivado, ISE, ModelSim).
- Proficiency in embedded systems programming, particularly with C/C++.
- Strong understanding of embedded Linux (PetaLinux), including bootloader configuration, kernel customization, and driver development.
- Ability to read and interpret PCB schematics and collaborate with hardware teams on prototype development and testing.

DESIRED QUALIFICATIONS:

- Familiarity with spaceflight software and experience in Core Flight Software (CFS) or equivalent.
- Familiarity with real-time operating systems (RTOS) and space-specific requirements
- Experience with FPGA-based high-speed communication, data processing, and hardware interfaces in space systems.
- Hands-on experience with FPGA and embedded systems for space applications.

Interested candidates, please forward your resume and transcripts to OpenPositions@GenesisESI.com.

BENEFITS:

- 401(k)
- 401(k) matching
- Profit-Sharing
- Dental Insurance
- Disability insurance
- Employee assistance program
- Flexible spending account Health insurance
- Life insurance
- Paid time off
- Parental leave
- Tuition reimbursement
- Vision insurance

SUPPLEMENTAL PAY:

- Bonus pay (discretionary)

AAP/EEO Statement

We consider all applicants for positions without regard to sex, religion, race, color, age, disability, sexual orientation, marital or veteran status, national origin or genetic' information or any other similarly protected status. We also comply with all applicable laws governing employment practices and do not discriminate based on any unlawful criteria.

If you meet these qualifications and feel this will be a good fit for you, please apply by sending us a cover letter and resume. Your cover letter should help us get to know you in a way your resume doesn't.

Please send cover letter & resume to OpenPositions@GenesisESI.com.