

Role Profile

External Role Title: Embedded Electrical Engineer

Reports To: Instrument Engineering Manager

Position Location: Windsor, WI

Pay Grade:

Work Level: 1

Exemption Status: Exempt

Summary:

At Genus R&D, we empower our colleagues and their customers around the world to fulfill a mission that is genuinely crucial to the future of humankind: to pioneer animal genetic improvement to help sustainably nourish the world. Food consumption is expected to rise by 60% in the next 20 years. Our challenge is to affordably and sustainably meet that escalating demand. We are seeking an Embedded Electrical Engineer to join the Instrument Engineering team in pioneering research to transform the global animal protein industry.

Overview:

The Embedded Electrical Engineer will implement defined architectures, algorithms, and designs within programmable logic devices for flow cytometers used in the analysis and processing of animal cells. This position will work closely with electrical engineering, systems engineering, and software designers to develop improved systems and features. The role will require understanding behavioral definitions, implementing in HDL, timing analysis, simulation and test bench development, and management of a code base covering multiple FPGAs across multiple PCBs. Join our team to make a global impact on one of the biggest challenges currently facing mankind.

Key Responsibilities:

- Read and understand requirements, state diagrams, behavior descriptions, and algorithm definitions
- Formulate FPGA requirements, create mealy state machines and their diagrams, develop complex algorithms from reference pseudocode, support development of and utilize standardized memory structures, and develop test requirements
- Design and implement complex real-time programmable logic designs in HDL for system control and data processing including non-sequential and sequential logic
- Understand synthesis tools, and translate RTL code into underlying structures
- Read and understand gate level diagrams
- Develop, execute, and analyze self-checking test benches

- Develop and maintain constraint files for programmable devices
- Define appropriate timing constraints and timing analysis
- Conduct hands-on lab testing to verify behavior and performance using standard electrical laboratory tools
- Operate within design control procedures and source code repository while supporting development of build automation and other CI/CD tasks
- Follow defined architecture and engineering best practices

Minimal Qualifications:

- BS in Electrical Engineering, Computer Engineering, Computer Science, or a related field
- Experience in developing complex FPGA designs
- Competent in Verilog or VHDL programming
- Competent in Xilinx or Altera design packages including synthesis, building, timing analysis, and simulation
- Hands-on experience with electronic troubleshooting utilizing engineering test equipment such as an oscilloscope
- Ability to critically analyze failures and issues to determine resolution paths
- Ability to read, and understand electrical schematics and datasheets for digital and electrical devices
- Familiarity and comfort using Windows and Linux based systems including terminal based operation

Preferred Qualifications:

- Product development experience
- Experience with embedded software programming
- Experience with python, TCL, YML files, and CI/CD style workflows
- Experience with AGILE mindset, sprints, issue tracking, and tools like JIRA
- Experience with GIT style repository commands including command line style operation
- Familiarity with control system design including time domain and frequency domain analysis, in both analog and digital systems
- Experience with serial and parallel protocols including SPI, I2C, USB, UART, AXI, and others
- Ability to design for scalable reuse using generics, parameters, code unrolling and other techniques
- Circuit board design experience including high speed design, controlled impedance, and high density interconnect techniques

Capabilities and behaviors:

- Lives and displays the Genus Values
- Collaborates constructively with peers and team
- Maintains professional verbal and written communications with co-workers, internal and external customers, and vendors
- Flexible with job responsibilities and consistently strives to be an effective team member
- Gains a thorough understanding of the Company's business and the department's role within the company
- Proactively identifies opportunities for improvement, and shares with appropriate stakeholders

- Clear and effective communicator for technical and non-technical audiences
- Strong desire for learning, creativity, problem solving, and invention