

FPGA Software Engineering Intern

Type of Position: Internship

Achronix is a privately-held fabless semiconductor company based in Santa Clara, California, that offers high-performance FPGA solutions. Our history is one of pushing boundaries, creating new markets, and offering innovative solutions to our customer's most challenging problems. Our target industries include 5G wireless infrastructure, network switching, as well as edge device and datacenter compute acceleration. Our product offerings include embedded FPGA fabrics IPs, high-performance and high-density packaged FPGAs with hardened system-level interfaces, data center and HPC hardware accelerator boards, and best-in-class EDA software. The Achronix CAD Environment (ACE) is the software tool used by our customers to synthesize, map, place-and-route, and program our FPGAs. Achronix Software Engineers research and develop novel and computationally hard software algorithms to enable our programmable hardware. ACE is the window to our FPGA technology.

Job Description/Responsibilities

Depending on your background and experience, you will be working with a mentor in our Software Engineering team in one of the following areas:

EDA Software Developer: Add features to, find and fix bugs in, or create new core algorithms for, our flagship EDA (Electronic Design Automation) tool ACE (Achronix CAD Environment). This could include work on one of the following: algorithms for logic synthesis and mapping; netlist optimization for timing, area, and power; FPGA global or detailed placement; FPGA routing; static timing analysis; static or dynamic power analysis. Requires experience with C++ and the C++ STL (Standard Template Library), and with the runtime/memory trade-offs and implementation of common algorithms and data structures.

EDA Software QA (Testing, Verification, and Documentation): Write unit tests and regression tests to find bugs and verify bug fixes and new features in our flagship EDA (Electronic Design Automation) tool ACE (Achronix CAD Environment). Learn from domain experts how to use new features in ACE, and write first-draft documentation in the form of User Guide entries and/or Tutorial documents.

AI/ML Engineer: Aid in the development of the hardware and software stack for an FPGA-based ML (Machine Learning) inference accelerator card reference platform. Familiarity is desired with compilers such as TVM, Glow, MLIR, Halide, or LLVM; machine learning frameworks such as TensorFlow, PyTorch, Caffe2, MXNet, or Keras; and with models such as AlexNet, ResNet50, Inception, YOLO, RNN, or LSTM.

DevOps Engineer: Support the agile development process of our flagship EDA (Electronic Design Automation) tool ACE (Achronix CAD Environment). Using a combination of 3rd party tools and internally-developed scripts, develop and support processes for bug tracking, continuous integration, regression testing, and QoR (Quality of Results) monitoring and analysis. Requires skill in one or more of: Bugzilla, TextTest, MySQL, Dokuwiki, Confluence, Perforce, Git, CMake, GCC, Django, Python, Perl, Tcl, or automated GUI testing.

Required Skills:

- Skilled practitioner in C++.
- Experience in a scripting language (Python, Perl, or Tcl) and a hardware description language (Verilog or VHDL).
- Eligible to work in the United States.

Education:

Currently pursuing a Bachelor's, Master's or PhD degree in Computer Science, Computer Engineering, Electrical Engineering, Applied Math, or a related field.