



Codelucida

TIMESTEP Summer Internship Program Application

27th March 2018

1. Company Details:

Codelucida, Inc. is an early-stage semiconductor intellectual property (IP) licensing company that develops new cutting-edge error-correction for next-generation data storage and communication systems. Error-correction is a critical piece of technology driven by sophisticated algorithms that maintains data reliability by correcting errors introduced in the data stored (uncorrected errors can cause loss of data, corrupted files, system crashes, etc.). Codelucida's initial target application is the flash memory (which is the type of storage media used today in smartphones, as well as in computers, laptops and data centers in the form of solid state drives) enabling cheaper, high-capacity, and high-performance flash memory based storage.

Codelucida is a university spin-out based on research that was done at the University of Arizona. It is a recipient of the NSF SBIR Phase-2 award, secured a seed round of investment from local and regional angel investors, a Spring 2017 Arizona Innovation Challenge Award winner, and was recently recognized as 2018 Start Up of the Year by Tech Launch Arizona.

2. Supervisor(s) of Internship:

- Ben Reynwar, Hardware Engineer

3. Job Description:

- We are seeking a summer intern with GPU programming skills to help us accelerate simulations of our error correction algorithms. The ideal candidate is expected to be passionate about implementing algorithms for error correction and to quickly contribute to the development efforts in our team. S/he should have the ability to solve problems through strong analytical skills and solid debugging techniques.

Required: Experience with GPU programming such as OpenCL or CUDA and/or GPU-based acceleration libraries. Ability to clearly document and report project status and progress to others at regular intervals.

Desired: Good knowledge of Linux and source control (git). Knowledge of CPU/GPU profiling. Familiarity with software fundamentals, including software design, object-oriented design, algorithm development, data structures, code modularity and maintainability.

4. Technical Work Experience:

- June – July:
Learn about LDPC error correction.
Understand the C implementation of the decoder.
Start experimenting and thinking about a GPU implementation.
- July – August:
Create a GPU implementation of an LDPC decoder.
- August – September:
Analyze the relative efficiencies of CPU, GPU and FPGA implementations.
Experiment with deploying simulations to AWS (Amazon Web Services).