

Senior Design Weekly Status Report

sddec22-17: ASIC Fabrication

Report 4

Feb 21, 2022 - Feb 27, 2022

Team Members:

Soma Szabo - Researcher / Component Design

Constantine Mantas - Researcher / Team organization leader

Dawood Ghauri - Researcher / Design Workflow

Courtney Violett - Researcher / Testing

Progress Summary:

The main objective this week was to finalize the *roundtrip* test run for the given example project and begin thinking about the application our ASIC will be running. A few issues still remain in the *roundtrip* finalization (which involves the setup of our local environments to run the eFables software), but we're almost complete with this task. We researched how bitcoin mining can be implemented in hardware and began work on a high level schematic for our implementation. Also we have begun to develop a guide to future teams on how they can more efficiently set up their environments to avoid the roadblocks we have faced.

Past week accomplishments:

Soma Szabo - The Bitcoin mining process was understood and created a rough design for what needs to be executed for the Bitcoin mining process. Still working on setting up the local design environment on Windows, Mac, and tried using Open Galaxy workspace (virtual machine).

Dawood Ghauri - Finished *roundtrip* documentation runthrough for setting up of the local environment. Currently in the process of making sure local documentation is up-to-date so that

Senior Design Weekly Status Report

all team members can have their environments setup. Researched more about bitcoin mining with the team and how we could create a feasible design for our project.

Constantine Mantas - Worked on setting up the workspace enabled to interface with the caravel harness. Researched the bitcoin mining process and how that can be implemented in our design. Worked on a future users guide to setting up our workspace more efficiently.

Courtney Violet - Worked on going through research for our design. This included reading through Prof. Duwe paper on a potential new bitcoin mining process that we hope to implement and other related papers and information on bitcoin mining. Also worked extensively with the group to set up our dev environments. Also assisted with setting up the future user guide for setting up the dev environment.

Pending Issues:

- Build and test a simple adder circuit in the caravel work environment.
- More detailed schematic of the hardware design.
 - The adder and the bitcoin mining core.
- Finalize going through setting up the local environment and going through pre-check for given example.
- Look into Open Cloud (VM) and using git to share the workspace and tools
- Potentially explore bring-up processes for chips (such an UVM)
- Finish instructions for future users on setting up the dev environment for both Windows and Mac.

Individual Contributions:

https://docs.google.com/spreadsheets/d/16JZdcN7ZWrpaeMXxc_UKMeUQITxlRqzOzuwnaxndY/edit?usp=sharing

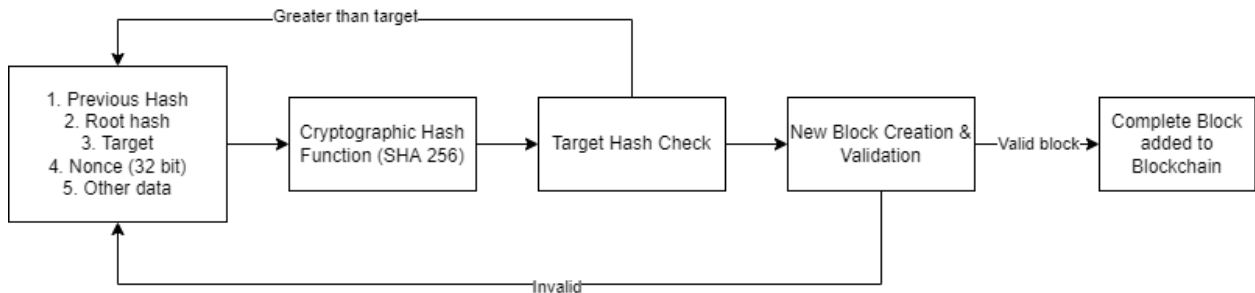
Senior Design Weekly Status Report

Summary of weekly advisor meeting (if applicable/optional):

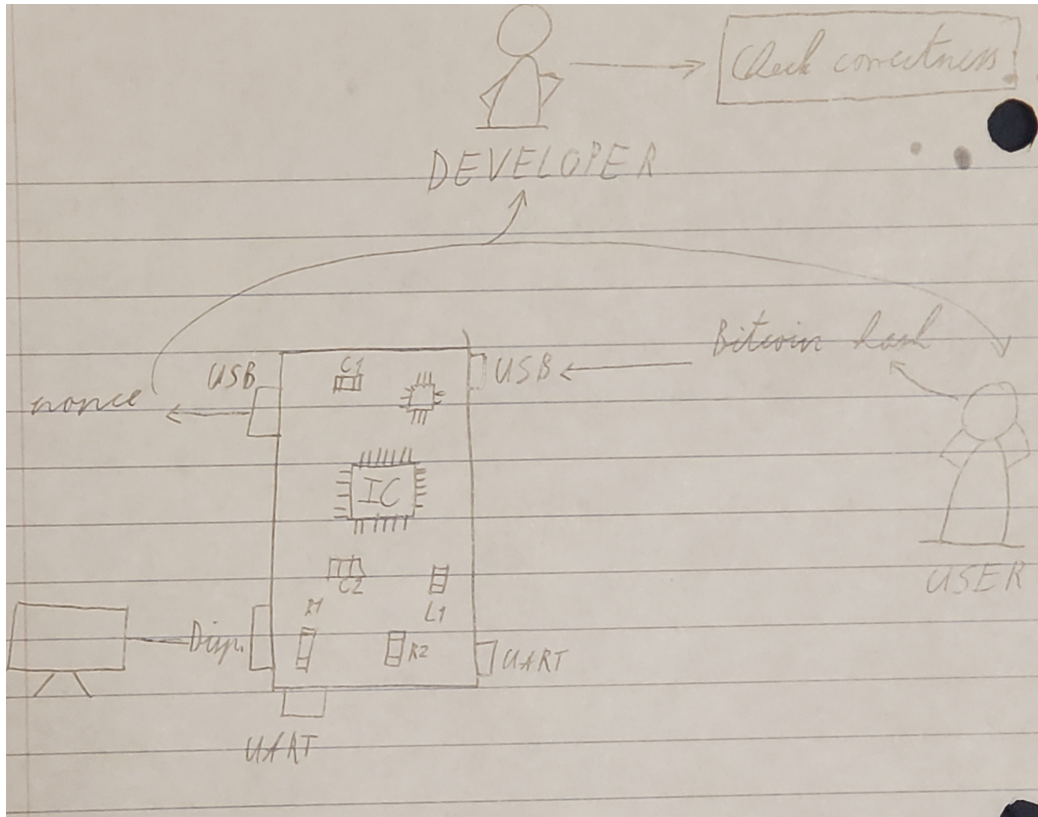
A concise summary on the contents and progress made during the advisor meeting.

We discussed current issues regarding the work environment setup as well as how we may overcome them. We also discussed objectives beyond the environment setup which will first be to create and fully test in the efables environment a simple adder.

Bitcoin Mining Process Diagram:



Use Case Diagram:



Senior Design Weekly Status Report

User Profile:

The diagram is a hand-drawn user profile for a person named TOM. It is organized into several sections:

- Profile Information:**
 - Name: TOM
 - Profession: CPRE Major
 - Age: 22
 - From: Ames, IA
- Challenges:**
 - Too much CPRE homework.
 - Too much time in Lab
 - Eyes in constant agony from computers
 - Iowa is way too cold
- Goals:**
 - Undergrad degree
 - Full time job
- Influences:**
 - Money
 - Friends
 - Food
 - Family