



Team Guava

Critical Design Review Presentation

S18



SCEL

Smart Campus Energy Laboratory

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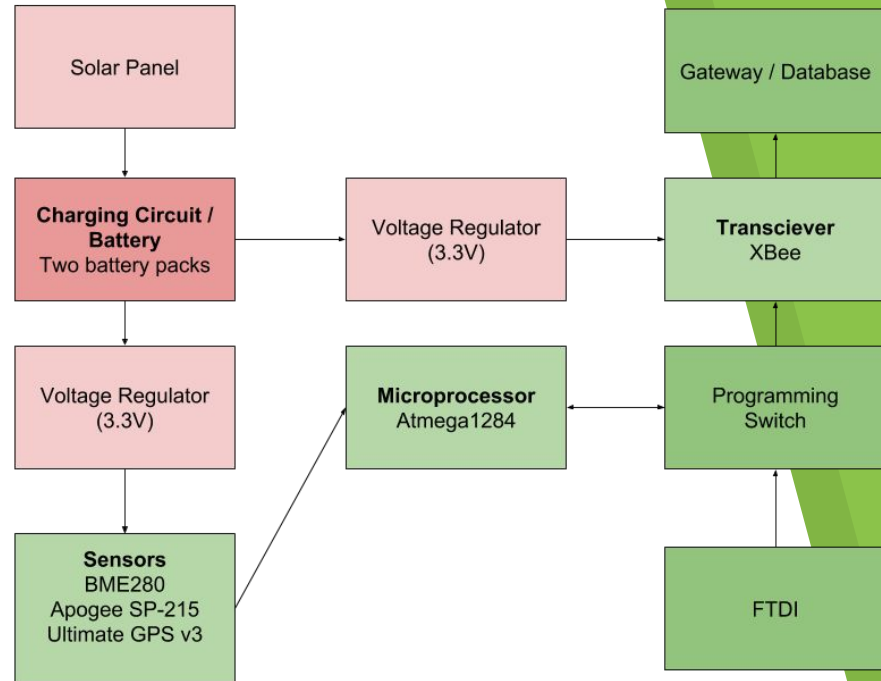
Presentation Overview

- Introduction
- Block Diagram
- Design
 - Schematic/PCB
 - Board Progress/Improvements
- Future Work
- Gantt Chart
- Potential Problems
- Questions



Block Diagram

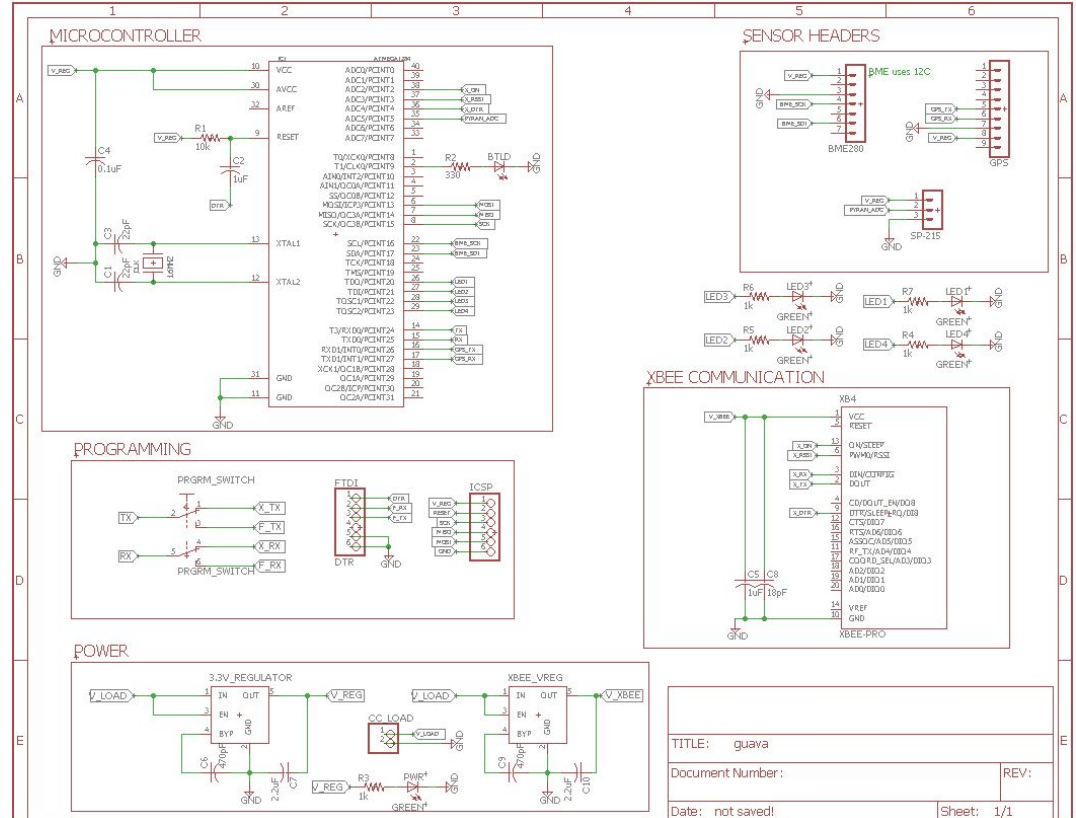
- Voltage Regulators
3.3V for sensors.
Separate 3.3V
regulator for XBee
- Physical
Programming
Switch to change
RX/TX connections





Schematic

- 6 LEDs for debugging
 - Including bootload and power
- Sensors are connected to board using headers
- Includes headers for programming and bootloading

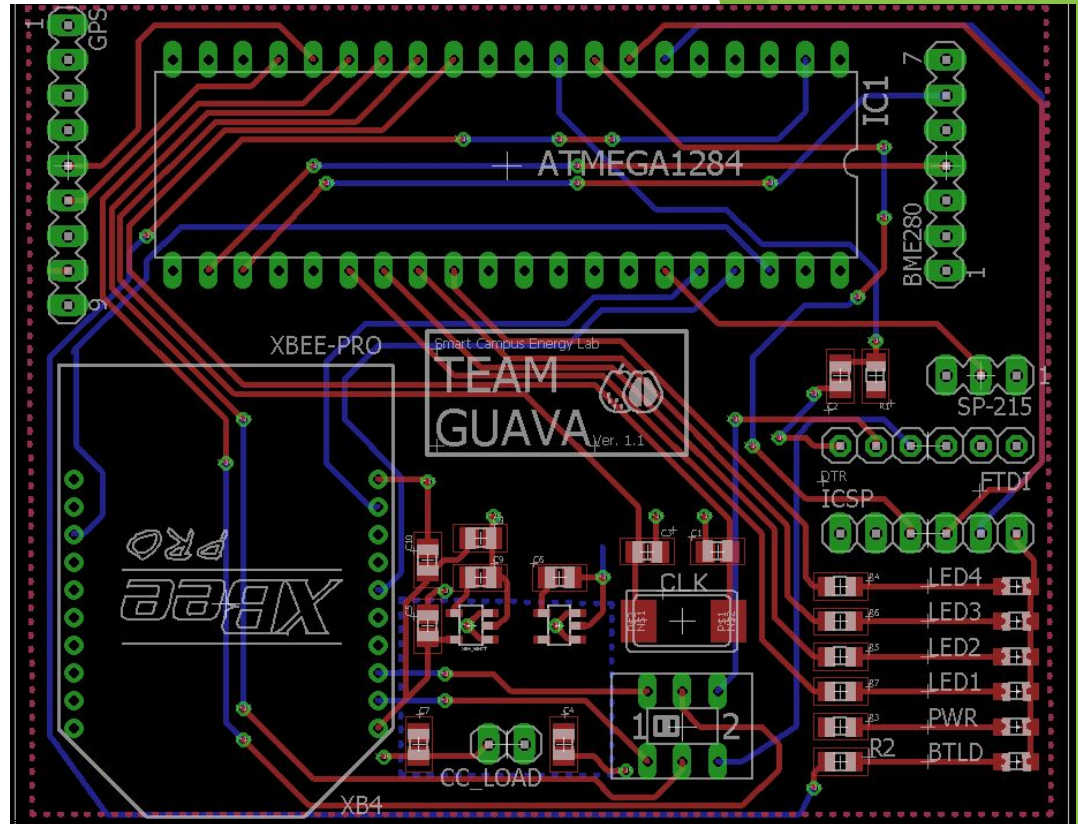


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Printed Circuit Board

- 6 LEDs for debugging
 - Including bootload and power
- Sensors are connected to board using headers
- Includes headers for programming and bootloading





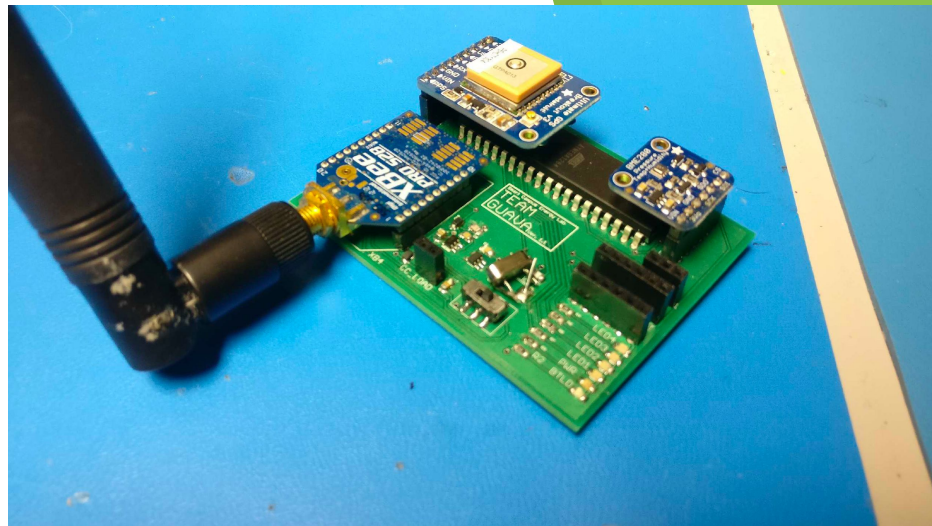
Guava Progress

Board Population

- Populated one board, given to software team as a dev board
- Standby for DIP carriers for remaining 3 boards
- Accidentally ran at too high of a voltage

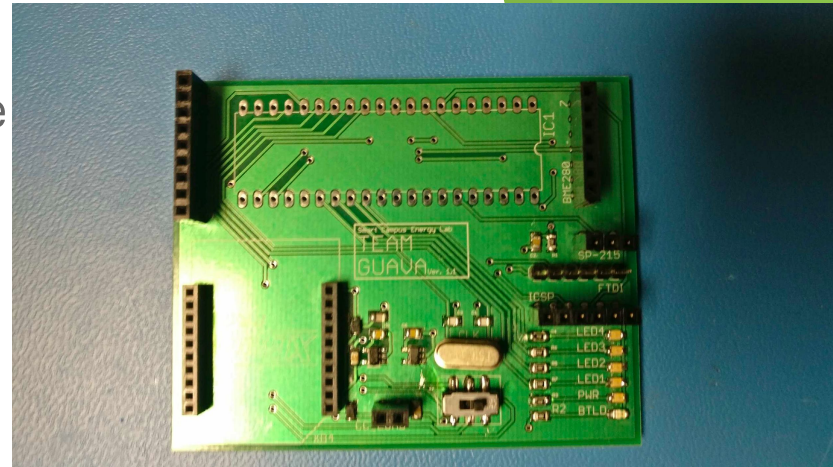
Firmware

- Board is able to bootload and program
- Tested uploading sketch through FTDI



Board Improvements for 1.2

- Bootloader LED to PIN1 from PIN2
- ICSP RESET pin to PIN9 node
- CLOCK pads not correct
- Switch is SMT, not through-hole

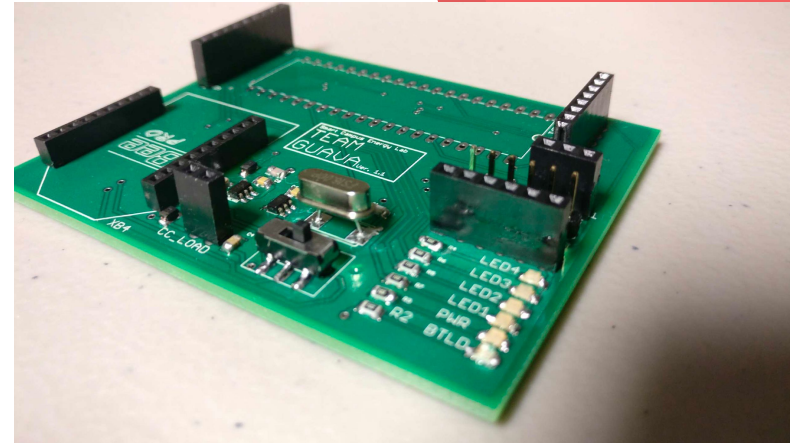




Future Work

Produce a self-sustaining environmental sensor module that will collect meteorological data

- Finish populating the boards
- Take actual power measurements
- Change clock speed from 16 to 8MHz (not as likely to implement this semester)
- Implement running two batteries
- Debugging



	Guava								
Week	10	11	12	13	14	15	16	17	18
Date	3/12/2018	3/19/2018	3/26/2018	4/2/2018	4/9/2018	4/16/2018	4/23/2018	4/30/2018	5/7/2018
Presentations									
Proposal									
PDR									
CDR		3/24/18							
Final							4/28/18		
Power Budget									
Housing			Spring Break						
Designing									
Printing									
Parts order/Bill of Materials									
Build									
Fabrication Time									
Testing									
Final Report									



Gantt Chart



Potential Problems

- Power consumption of 1284P
- Sketch uploading issues for board
- Figuring out changing clock speed
- Figuring out running two batteries in parallel

Other

- Long debugging process



Thank you!
Any Questions?



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CREDITS

We used the following free online resources:

- ▶ Presentation template by [SlidesCarnival](#)
- ▶ Photographs by [Death to the Stock Photo](#) ([license](#))