

EE / CprE / SE 492 – sdmay24-25

Distributed Sniffer Nodes for Batteryless Sensor Nodes

Week N Report

Feb 12 – Feb 24

Client: Professor Duwe

Faculty Advisor: Professor Duwe

Team Members:

Thomas Gaul- Team Lead, Software Lead

Spencer Sutton- Software Member

Tori Kittleson- Hardware Lead

Ian Hollingworth- Software Member

Mathew Crabb- Hardware Member

Past Weeks Accomplishments

Ian- Spent some time identifying which parts of the SPI example code need to be added to Spencer's modified code to transfer information received via sub-1Ghz via SPI.

Matt - Attended client meeting for the first time in awhile (class conflicts) and had an extremely productive meeting, clarified Sniffer PCB requirements with client, sourced components for Sniffer PCB, made progress on the Sniffer PCB, met with hardware team to begin working on the battery power supply system

Spencer- attended meetings, validated faux Bob code to be functioning and correct, dug through existing code to create a plan for SPI integration, currently supporting SPI integration

Thomas- Worked on creating sniffer node network and functions and structures to go along with it and updated host code to stay up to date with structures.

Tori- Finalized layout for MSP and ordered board. Attended client meeting, met with Matt and got specific tasks to work on for Sniffer project.

Pending Issues

None

Individual Contributions

Team Member	Contribution	Bi-Weekly Hours	Total Hours(starting tracking week 3)
Thomas Gaul	Attended client and team meetings, Sink node network code, updated host code, and packet setup	11.5	26.5
Tori Kittleson	Completed layout for MSP_Simplified, attended client and team meeting. Beginning work on sniffer schematic.	8	17.25
Mathew Crabb	Attended client meeting, attended team meetings, sourced components, developed Sniffer schematic	19	31
Ian Hollingworth	Attended client meeting, downloaded Spencer's code and began integrating the SPI example into the code.	8	12
Spencer Sutton	Validated faux Bob code, planning and assisting SPI integration	6	18

Plans for Coming Week

Hardware: Solder and perform basic testing on the MSP_Simplified PCB that just arrived. Work through design complex items (power, charging, batteries) and fully implement a first revision of the schematic. Matt will be looking into power and Tori will look into charging. Both working on

schematic as well. Planning a team schematic review at next week's Tuesday meeting with the client.

Software: Complete integration of data being picked up from BOB node by primary node and transferred to the relay node. Complete first revision of sniffer network code and test. Then integrate the two to pass data to and from the host, sink, sniffer relay, sniffer primary, BOB and then back.

Design context updates

We added two ideas to broader context effects. 1. We will need to use solder to fabricate our boards which can have adverse health and environmental effects. We will mitigate this by following good soldering practices, such as washing hands and soldering in a well-ventilated area. 2. Our sniffer nodes need a wireless power source, and we are using rechargeable batteries. To these are bad for the environment at the end of life and can be dangerous in use case. To mitigate these effects we are using a less harmful chemical composition and only using them in a controlled lab environment with battery protection and then at end of life we will follow proper disposal.

To demonstrate our positive effects we are basing our work and design decision with the research team that will be using it. We can extrapolate that other research teams will have similar benefits from our work.

To justify the negative effects of batteries and solder. We look at the requirement to use both of them to achieve our goal and the potential benefit of our project. Research that will use our project aims to decrease the need for batteries, which will have a net positive effect on the environment, especially with those batteries in a less controlled environment.