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**EE/CprE/SE 491 WEEKLY REPORT 1**  
*September 8, 2019 – September 29, 2019*

**Group number:** 37

**Project title:** Open-Source Prototyping of Advanced Wireless Systems for Smart Agriculture and Connected Rural Communities

**Client &/Advisor:** Hongwei Zhang, Matthias Sander-Frigau

**Team Members/Role:** Zequn Wang – Meeting Scribe  
Dylan Sharp – Meeting Facilitator  
Jiawei Deng – Chief Engineer  
Zhenwei Su – Report Manager  
Shaohang Hu – Test Engineer

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○ **Weekly Summary**

The focus over the last two weeks was the beginning of understanding the PRKS algorithm, virtualizing OpenWrt operating system on our local computers, and creating an initial Gantt chart for project planning.

○ **Past weeks accomplishments**

- Took notes regarding PRKS – Jiawei, Zhenwei, Zequn
  - Notes are located on our CyBox share folder
  - Gained initial understanding of exclusive region which is used to determine a set of nodes that will interfere with each other's transmissions.
  - Jiawei worked on the rough understanding of the algorithm
  - Zhenwei worked on the rough understanding of the algorithm
  - Zequn worked on the rough understanding of the algorithm
- OpenWrt Virtualization – Shaohang
  - Got OpenWrt to boot within Oracle VM VirtualBox
  - Documentation: <https://iastate.app.box.com/file/528145581088>
- Gantt Chart – Dylan
  - Created an initial version of the gantt chart for the rest of this project
  - Initially it is composed of high-level tasks that will need to be broke down further
  - Can be found on cybox
- Set Up Trello – Dylan
  - Created initial tickets for tasks to keep track of work

○ **Pending issues**

- The algorithms contain a lot of concepts and are very difficult. We will discuss with the advisor and ask some questions about it.

○ **Individual contributions**

| <b><u>NAME</u></b> | <b><u>Individual Contributions</u></b>  | <b><u>Hours this week</u></b> | <b><u>HOURS cumulative</u></b> |
|--------------------|---|-------------------------------|--------------------------------|
| Zeun Wang          | Learning PRKS Algorithm                 | 10                            | 10                             |
| Dylan Sharp        | Initial Gantt Chart Setup, Trello Setup | 10                            | 10                             |
| Shaohang Hu        | Setup OpenWrt VM                        | 11                            | 11                             |
| Zhenwei Su         | Learning PRKS Algorithm                 | 9                             | 9                              |
| Jiawei Deng        | Learning PRKS Algorithm                 | 12                            | 12                             |

○ **Comments and extended discussion**

- The biggest problem now is that the algorithms of reference are too much and complicated to understand. We need to talk with the instructor and spend more time on it.

○ **Plans for the upcoming week**

- Break down gantt chart further – Dylan
  - Need to break down the bigger tasks into smaller tasks with deadlines
- Cross compile OpenWrt hello world application – Dylan
  - Program an application and compile it for OpenWrt on the Qualcomm Atheros QCA9533 rev 2 hardware.
  - Just needs to print out hello world
- Continue the understanding of PRKS algorithm – Jiawei, Zeun, Zhenwei
- Virtualizing Hardware using QEMU – Shaohang