

Middle East Technical University

Electrical - Electronics Engineering Department

## EE494 - Engineering Design II

## Weekly Report

**Group Name:** λambda

**Date:** 17.04.2022 *(Week 6&7)*

**Design Coordinator:**

Associate Professor Dr. Elif Vural

**Members of Company :**

**-**Berk Erhan Yüksel

**-**Necdet Can Sönmez

**-**Mustafa Barış Emektar

**-**Alper Saraç

**-**Furkan İtkü

1. **Done During Week 6**
2. The system was tested with two tags to assess the functionality of the system. The modifications we have done allowed the system to operate successfully.
3. The effects of interference with multiple tags was tested briefly. By turning tags on and off, we observed that the effects of interference were not noticed by our detection system. The operation continued as normal when another tag was introduced to the environment
4. The algorithm of the project has improved considerably:
   1. Transmit and receive operations were changed to be asynchronous. Previously, the transmit and receive operations were blocking and this was not compatible with multiple communication targets.
   2. Synchronization of receive-transmit operations were improved.
   3. Tags now send out their ID. Note that this ID value is not indicative of the tag being a zone or a doorway tag. ID value is only used to distinguish between different tags during communication. If one were to switch the places of any two tags, the operation would still be the same as before.
   4. The distance computation algorithm was improved for it to be able to work with multiple tags. As we have some variables such as the kalman factor that are tag specific, different variables were assigned to different tags. With this, the RSSI measurements taken from different tags will be processed independently, as it should be.
5. **Planned for Week 7**
6. In the following week, the tests and the improvements on the projects algorithm will be continued:
   1. The team will try the doorway tag case algorithm since we can now work with multiple tags.
   2. The code will be optimized and minimized (without losing any functionality) as much as possible to increase devices speed and accuracy.