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Project Progress Report 5

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CTS: Children Tracking System
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Introduction

2 weeks ago we’ve made a demonstration showing the basic operation mechanism of a Bluetooth scatternet application. In a scatternet application, each “level” of node is referred to as a “hop” and, by utilizing this hop mechanism, any given node can reach a distant node (that is normally out of range, if a direct connection were to be established) provided that there are hops in between that will relay the connection.

The code we have already provides such functionality and all we’ll have to do, as mentioned in the previous report, is to add a timer based event handler that will report when a child (node) is out of range. In this report we will talk about this system.
Applying Scatternet to CTS

Below, there is a screenshot of the Scatternet program.

Whenever a device is discovered through the network, it’s displayed with its hop info (highlighted above).

The event handler basically works like this:

- **Scatternet application initialization**
  - Device detection
  - Network formation

- **Timer based event handler**
  - Timer starts at each node
  - Each node pings the adjacent nodes
  - Whenever an expected ping is not received, server is notified
  - Child is presumed missing
The following flow diagram explains the execution order in a clearer fashion:

1. **Scatternet**
   - Report Missing Nodes

2. **(Node Levels) Hops**
   - Initialize every node in the level
   - Ping all nodes inside the level

3. **Ping**
   - Timer based ping requests

4. **Node**
   - Timer
Conclusion

Currently, the only missing functionality is the timer based event handler, which will be implemented using the methodologies we’ve explained.

Overall, the project is nearing completion and after the timer implementation, we are confident that we’ll have a working “Child Tracking System” satisfying all of our initial expectations.
References

- Open Source software for forming the scatternet network- (https://scatternet.dev.java.net)