We have designed and developed an IoT-based prototype for IoT applications. This device captures bio-signals, performs compression, and then transmits the data to the Smartphone via Bluetooth. The main purpose of this device is for IoT-based healthcare monitoring and capturing ECG data, but is compatible with other sensors.

**Goals:**
This thesis aims at implementing a benchmark suit for IoT applications. First, we need to explore the IoT applications, especially in healthcare domain, and find the common core tasks which are being used in typical IoT applications. Other application domains like automotive, smart home, smart building, etc. are needed to be explored too.

Then these applications will be implemented in C (platform independent). Then you will program the IoT device to evaluate the applications for execution time, energy consumption, memory usage, etc.

**What is already available?**
The device is fully functional and ready. This thesis does not involve with hardware design, sensor integration, etc. It will be provided by CES.

**Required Knowledge:**
- C programming

**Helpful knowledge:**
- Arduino boards
- Profiling tools (code analyzers)

**You will learn about:**
- IoT applications
- Microcontroller programming

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