

Sensor Nodes Laboratory (SS 2019)

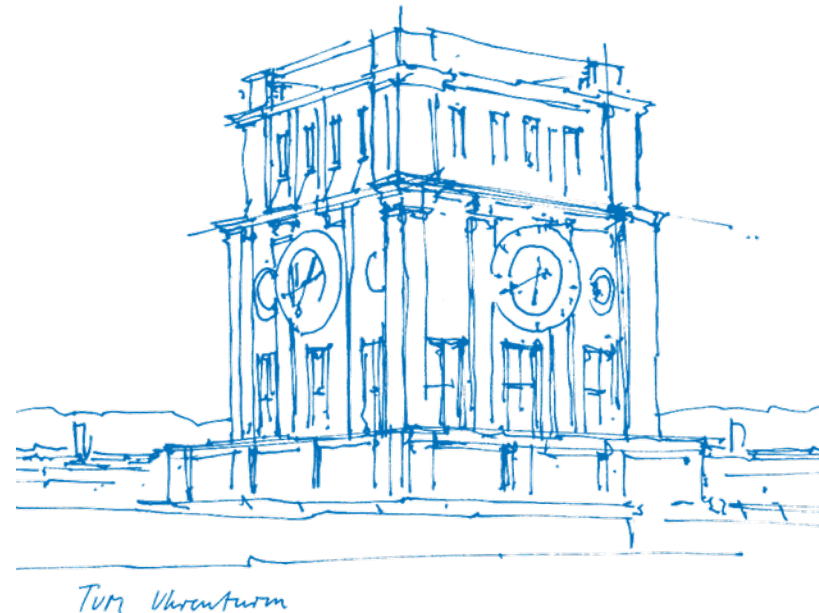
Kick-Off Meeting

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April 26, 2019



Outline

1 Structure of the Course

2 Deliverables

3 Group Assignment

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Structure of the Course

- Kick-Off Meeting in the first week.
- Lecture-style meetings in the next two weeks, where we introduce the theoretical foundations required for the rest of this course, introducing the Hardware/Software framework, etc.
- Different sensors will be assigned to two different groups of students.
- The overall project is split into two main tasks.

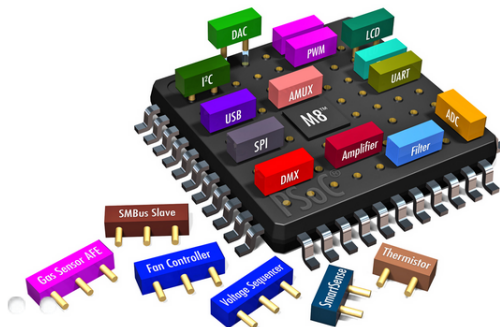
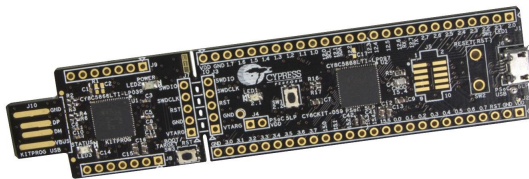
Task 1

1. Designing of an analog frontend circuit for the sensor provided to your group.
2. Using appropriate input filtering in order to have reasonable analog signals.
3. Digitize your signals using an analog to digital converter (ADC).
4. Transfer the digital data to a wireless front-end board.

Task 2

1. Package data with identifier/timestamp.
2. Communicate with gateway for sending the data to a server.
3. Retry/fallback strategy to be thought.

Structure of the Course



Task 1

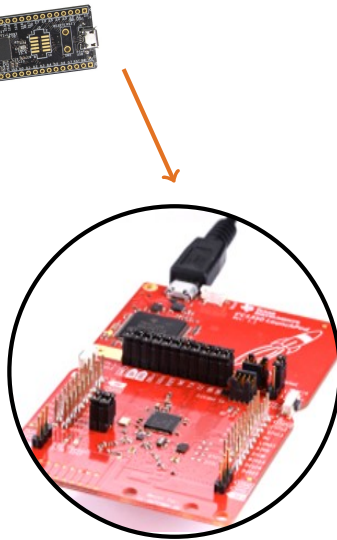
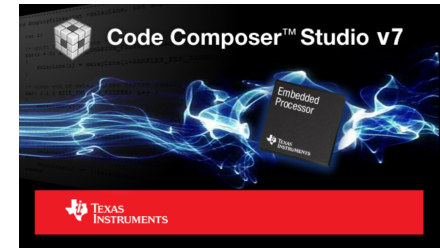
1. Designing of an analog frontend circuit for the sensor provided to your group.
2. Using appropriate input filtering in order to have reasonable analog signals.
3. Digitize your signals using an analog to digital converter (ADC).
4. Transfer the digital data to a wireless front-end board.



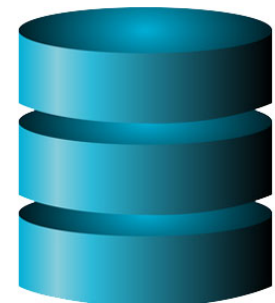
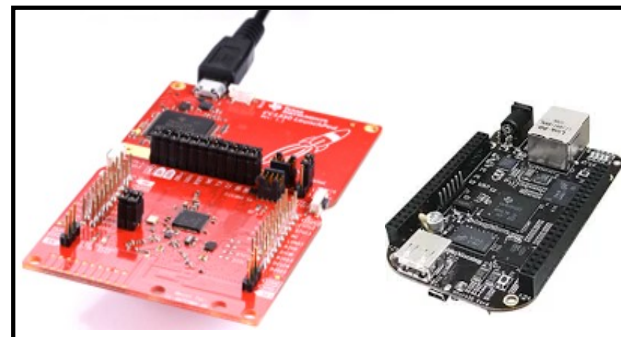
Structure of the Course

Task 2

1. Package data with identifier/timestamp.
2. Communicate with gateway for sending the data to a server.
3. Retry/fallback strategy to be thought.



Gateway and demo on visualizing data sent to the gateway-will be provided!



Structure of the Course

Goal (tentative)

- ***Having a fully functional prototype of a wireless sensor node ready by the end of the semester.***
- *Ideally, this prototype should be able to demonstrate the working principle of a wireless sensor node.*
- *The prototype should consist of hardware provided by the institute, your own readout circuit, and software for handling the measured data.*

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Deliverables: What constitutes your Grade?

- Paper: Write a [paper \(4 pages strict\)](#) in IEEE format.
- Presentation: [15-minutes oral presentation](#) of your results at the end of the semester with subsequent Q&A session.
- Update: [10-minutes update](#) discussions at the beginning of each appointment (evaluation of measurement results, discussion of software issues, literature research, etc.)
- Milestone Reports: We will have three milestones in the Sensor Nodes project. There should be a [one page milestone report](#) submitted after each project milestone. These milestones are:
 - Readout frontend including analog-to-digital conversion. (2-3 weeks)
 - Communication interface between readout circuit and wireless communication board. (2-3 weeks)
 - Data encapsulation and enqueueing. (1-2 weeks)

Read the literature in Moodle!

Templates, Literature, Instructions, etc. will be uploaded to Moodle. This Kick-Off slides will also follow...

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Group Assignment

Group slots will be assigned as follows

G1 G2

G1 Group 1	Nagesh, Nitish	Thekkekara, Sebastian	
G2 Group 2	Lopez Cruz, Daniel	Lavin Vizcaino, Daniel	Vilkelyte, Zivile

Waiting list (exported from TUMonline, April 24, 2019):

G2	fix	Vilkelyte	Zivile	WL:01	Tokareva	Svetlana
	fix	Zafar	Talha	WL:02	Thomas	Irene Eliza
	fix	Ahmad	Sohaib	G1 WL:03	Thekkekara	Sebastian
G2	fix	Lopez Cruz	Daniel	WL:04	Nawaz	Bazil
G2	fix	Lavin Vizcaino	Daniel			
G1	fix	Nagesh	Nitish			