INF FAKULTÄT FÜR INFORMATIK

Digital Engineering Projects WS16/17
Kickoff Meeting

SwarmLab
Chair of Intelligent Systems
Professor: Sanaz Mostaghim
Superviser: Christoph Steup
Tutor: Sebastian Mai

2016-10-19

Agenda

Organisation

Contact

Registration

Topics

- Position Estimation
- Developing a new Hardware Revision of FINken Robots

Organisation

- start: 2016-10-19
- end: 2017-03-31 (++)
- final registration at examination office: December
- 12 credits - this is a *huge* project
- weekly meetings with one of the supervisors
- you will be graded by
  - Software (Working Prototype)
  - Documentation
  - Final Presentation
- if you encounter problems: email, issue-tracker, regular meeting

Contact

Christoph Steup steup@ovgu.de (Lab Manager)
Sebastian Mai sebastian.mai@ovgu.de (Tutor)

Registration

- Deadline for Registration: Fri 2016-10-21
- Send an email to *sebastian.mai@st.ovgu.de* containing:
  - your name
  - field of studies
  - your favorite topics in descending order
  - if there are more applicants then project topics: your experience in working with
    - CAD/PCB-design
    - embedded programming
    - programming in C (C++)
    - GIT (and github)
    - soldering (SMD and wires)
    - systems theory
    - signal processing

Topic 1: Position Estimation

Goal Estimate a reliable pose for the copters.

Description We have tested several wireless-ranging and tracking systems that were not suited to compute a reliable position estimation for the robots. You will combine different sources of information to compute one good estimation of position. If there are many applicants for this topic, you will also test different wireless ranging methods and integrate the hardware into the copters.

Topics You need to have some background in systems theory, embedded programming (mostly C) signal processing.

Topic 2: Developing a new Hardware Revision of FINken Robots

Goal Integrate the changes we made to FINken 3 into a new hardware revision.

Description Currently the FINken 3 robots need to be heavily modified to fit our needs, as we discovered that several sensors work better in our modified version in comparision to the ones in the stock version of FINken 3. Main task will be to design at least one PCB to control the RGB-LEDs and aggregate sensory data in a separate micro controller (including software).

Topics Some of the tasks will include PCB-design, CAD-design, embedded programming, soldering, manufacturing of prototypes ...