Distributed Systems – Semester Project

Subheadline

- Stefan Henkler **E-Mail:** stefan.henkler@hshl.de

Truck Platooning Use Case

4. Develop an appropriate distributed and parallel architecture
   - What requirements and characteristics must be fulfilled
5. Implement your distributed and parallel system
   - Which implementation is appropriate for your purpose. Compare the known and discussed approaches.
     - This includes the distributed communication and interaction as well as the node specific parallel implementation
     - Which parallel programming model fits best for your purpose and which hardware do you have to choose.
       - Include in your comparison an example implementation of the known different parallel programming models.
     - Use GPUs for the implementation of parts of the algorithm
       - Try to optimize for example loop implementations
     - Clock synchronization should be implemented by the logical matrix clock pattern
   - Simulation
     - Show in a simulation (own test environment or Carla http://carla.org/) that your implementation is able to realize the developed use case
       - E.g. trucks joining a platoon, leader election, driving in convoy, obstacle detection, node failure detection, specify and implement an appropriate environment, …

Project documentation

- One document for each group
  - Contribution of 2 to 4 pages by each team member
  - Document style: https://www.ieee.org/conferences/publishing/templates.html
  - Make responsibilities and contribution clear
- Document should include architecture models like
  - Network architecture, node architecture, …
- …as well as relevant parts of the algorithms, protocols, and implementation (excerpts)
- The annex includes
  - Source code in detail
  - Github overview
    - Lines of code
    - Number of submits per person
    - Structure (folder hierarchy)
  - contribution in % by each member to the overall project including a coarse work estimation in h per member

Coarse document structure

- Abstract
  - Overview of document including main outcomes
- Motivation
  - Motivation for project including problem domain and requirements
- Sketch of approach
- Concept part
  - From architecture level down to algorithm and protocol level …
- Evaluation
  - (partly) implementation of system and
- Summary and outlook
- Appendix
- Affidavit

Affidavit

- We (Name < 1>, Name < 2>, …) herewith declare that we have composed the present paper and work ourself and without use of any other than the cited sources and aids. Sentences or parts of sentences quoted literally are marked as such; other references with regard to the statement and scope are indicated by full details of the publications concerned. The paper and work in the same or similar form has not been submitted to any examination body and has not been published. This paper was not yet, even in part, used in another examination or as a course performance.