

Development and Implementation of a Simulation Model for a State of the Art Time Synchronization Approach

- Language: German or English
- Prerequisites:
 - C/C++ programming and/or Python programming
 - Networking technology
 - Beneficial: Knowledge about the OMNeT++ network simulator or Python SciPy
- Tasks:
 - Understand and evaluate a state of the art (SOTA) approach for time synchronization using a given research paper
 - Develop and implement a simulation model for this approach
 - The implementation tasks can be done using numerical simulation (e.g., using Python SciPy) or network simulation (e.g., using OMNeT++)
 - Evaluate the approach under various condition:
 - Different network topologies
 - Different network sizes
 - Different background traffic conditions
 - Different clock stabilities
 - Verify your implementation: the results shall be comparable to the paper
- Literature:
 - The paper describing the actual SOTA approach will be provided
 - Tanenbaum, A. S., & Wetherall, D. (2011). Computer networks
 - Bletsas, A. (2005). Evaluation of Kalman filtering for network time keeping. *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*, 52(9), 1452-1460.
 - Wu, Y. C., Chaudhari, Q., & Serpedin, E. (2011). Clock synchronization of wireless sensor networks. *IEEE Signal Processing Magazine*, 28(1), 124-138.
- Contact: henning.puttnies@uni-rostock.de



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