A direct frequency approach for time synchronization of acoustic sensor nodes in a mesh

Most approaches for time synchronization in a sensor mesh rely on the estimation of the phase-offsets and the frequency deviations between the sensor nodes.

In this thesis, we propose a new approach, which uses the clock phase-offset and the frequency of the acoustic sensor nodes directly.

The thesis involves developing a frequency estimation error model and combining a distributed Kalman Filter with a distributed Estimation Maximization (EM) algorithm to efficiently estimate and track the clock frequency of the sensor nodes.

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