Scalable Localization with Mobility Prediction for UWSN

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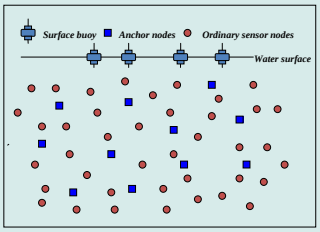
Problem:

- Challenges in UWSN: acoustic communication, node mobility, 3-D networks, and large scale
- Utilizing mobility: underwater objects move with temporal correlation and spatial correlation
- Our objective: design a scalable localization scheme with low overhead while good performance

Proposed Solution: **Scalable Localization with Mobility Prediction (SLMP)**

Network Model: hierarchical network architecture

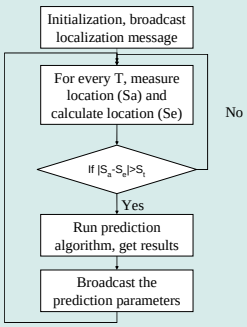
- Surface buoy: *can be localized by GPS or other means*
- Anchor node: *communicate with buoys to get localized*
- Ordinary node: *can only communicate with its neighbors*



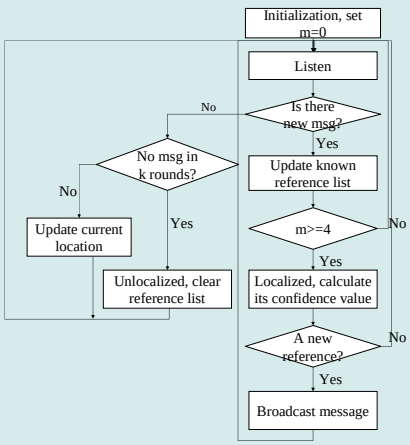
The Main Idea:

- *Anchor nodes do mobility prediction based on the temporal correlation, and broadcast their model parameters*
- *Ordinary node do mobility prediction based on the spatial correlation and the received messages.*

◆ ***Anchor node mobility prediction***



◆ ***Ordinary node mobility prediction***



Performance Evaluation: