

Discussion Session w. 43

- ▶ Topics for discussion session w. 43:
State Estimation — Kalman Filters and Particle Filters

Literature:

- ▶ Chap. 3–4 in: Thrun, S., Burgard, W., & Fox, D.: *Probabilistic Robotics*. Cambridge, MA: MIT Press, 2006.
- ▶ Gustafsson, F.: "Particle filter theory and practice with positioning applications", *IEEE Aerospace and Electronic Systems Magazine*, Vol. 25, No. 7, pp. 53–82, 2010.
- ▶ Schön, T., Gustafsson, F., & Nordlund, P.-J.: "Marginalized particle filters for mixed linear/nonlinear state-space models", *IEEE Transactions on Signal Processing*, Vol. 53, No. 7, pp. 2279–2289, 2005.

Discussion Session w. 43 (cont'd)

Simulation task:

- ▶ Implement a particle filter and use it for state estimation of a nonlinear dynamic system of your choice. Compare the computational complexity and the performance of the algorithm for different tuning parameters.