

Cooperative Control of Autonomous Surface Vehicles for Oil Skimming and Cleanup

Subhrajit Bhattacharya

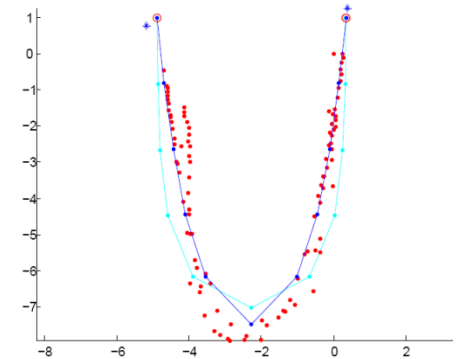
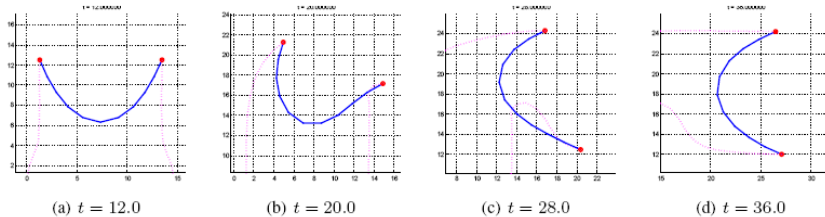
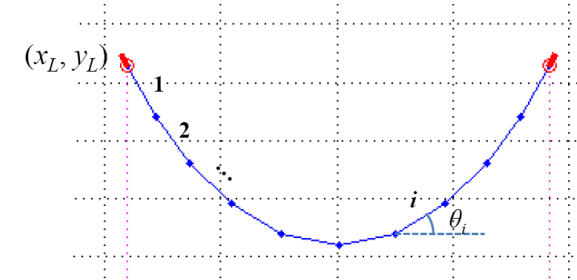
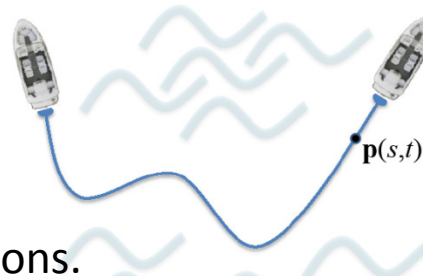
Hordur Heidarsson

Gaurav S. Sukhatme

Vijay Kumar

Model and simulation:

- Equations for rope dynamics.
- Discrete dynamic model.
- Quasi-static model.
- Force and position controlled simulations.

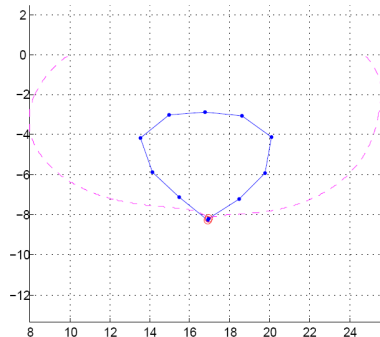


Field experiments:

- 2 ASVs with on-board computer, GPS and cameras for capturing rope shape & position.
- Steady state motion – matching with model & simulation.

Shape control:

- Achieve a desired shape



Coverage maximization:

Using relationship between separation between boats, rope length, max. force that vehicles can apply and coverage rate.

