

System identification and dynamic positioning (DP) of ships

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Introduction and background:

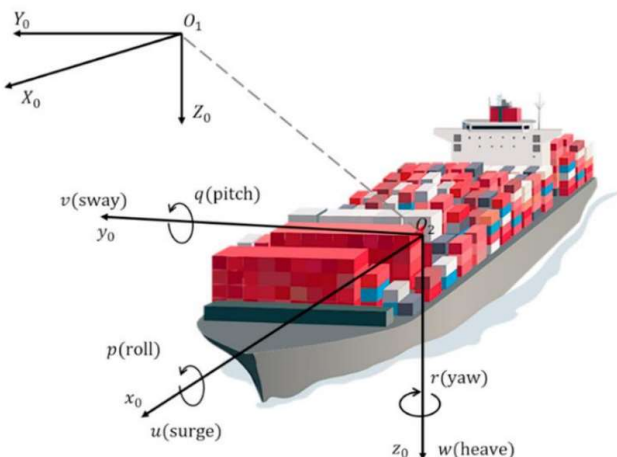
Dynamic models of ships are usually constructed from first principles theory and the primary equation for building such models is the Newton 2nd law and the forces acting on the ship. This often results in nonlinear models.

System identification builds linearized dynamic models based on known input and output data. Such known input and output data are usually obtained from input experiments on the real process/ship or on a non-linear simulator equivalent.

This report combines system identification and controller tuning for the developing of a DP system for a vessel. A supply boat is used here as an example of a typical vessel that utilizes DP systems.

Problem description and objective:

- Perform a literature research on DP system for marine vessels.
- Implement a dynamic model (possible to use available software) of a marine vessel which may be adequate for the description of the motion of the ship.
- Perform an input experiment design on the inputs, thrusters etc, in order to obtain input and output data matrices U and Y , respectively.
- Investigate if the above input and output data may be used to identify dynamic models, and a DP system for the ship.



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