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Control and Online Decision Support of Crane Operations for Fixed and Floating Offshore Wind Turbines

- Jan. 2016 – Dec. 2018
- Supervisor: Roger Skjetne (IMT, NTNU)
- Co-Supervisors: Zhen Gao (IMT, NTNU)

Research topics:

- Build control plant models for marine lifting operation.
- Design controllers to precisely locate the payloads (lumped-mass, tower, and blade) and verify it through experiments.
- Consider fixed-to-floating, floating-to-fixed, and floating-to-floating installation operations, as well as an integration with DP system.

Industrial goal:

- Design real-time robust controllers for the mating and positioning operations during wind turbine installation.
- Improve the weather limits during lifting and mating operations.

Scientific questions:

- Influence of wave-induced motion to the crane operation;
Underactuated system; High lifting; Robust control; Model-free control.

Innovations:

- Attempt to study vessel-based installations, not commonly jackup-based.