

### THE COMPANY

Shipborn is a young shipyard located in Nieuwegein building luxury sailing yachts for the high-end market. The focus of our shipyard is to produce high-tech sailing yachts capable of full autonomy. Currently, construction is underway on the TC90. A 90-foot sailing yacht focusing on a classical wooden interior design.



De Liesbosch 39C, Nieuwegein



+31 6 11748527



[www.shipborn.com](http://www.shipborn.com)

### GOAL

The first implementation of autonomy will manifest itself as an automated parking system. To achieve this, one needs to be able to accurately predict the ship's motion and subsequently know the actions it needs to take to autonomously park. This internship focuses on first arguing which modelling technique lends itself well to this challenge followed by building the dynamical model using the method of choice. Once a dynamical model has been found, find a controller that is able to control the system within given certain weather conditions and initial variables.

This dynamical system and controller can then be tested and verified on a small scale model of the boat that we have at the company. From there on, we expect you to be able to argue that your dynamical model will function in full scale as well.



### REQUIREMENTS

This internship requires a strong, critical and independent student. During this internship we expect you to learn at a rapid pace the deeper mechanics of a ship's motion and to provide solid reasoning as to why your modelling technique has provided good results in the past (literature) and will provide good results when we test it in the end. You will be able to defend and justify your choices at every step of the design process against critical questions. At the end of the day, we expect you to be (come) an expert in ship dynamics and control. As background, we expect you to have MSc level knowledge in most of the following subjects:

- Fluid Dynamics
- Dynamical Systems
- Control Systems
- Programming

We also ask you to have experience with or want to learn about Matlab and Simulink. Beyond these two direct requirements, we also ask of you to want to learn some auxiliary skills regarding the use of linux, programming in C/C++ (If you prefer, python3 is also possible) and finally using ROS2 and git.

*note: it is not required to have all the listed skills, we do not expect a student to possess this many skills that early in his/her career. However, a desire to fill your gaps in knowledge is a requirement instead. We will teach you the rest.*

