Post-Doctoral Researcher vacancy at Delft University of Technology on:

Optimization for automatic design of sustainable ships

Job description

The Department of Maritime & Transport Technology at Delft University of Technology invites applications for a new 2 year postdoc position on the topic of optimization for the automatic selection of components for design of future ships—ships that maximally benefit from state of the art technology to minimize environmental impact. This position is part of the recently approved INTERREG 2 SEAS program "ISHY – Implementation of Ship Hybridisation". As such, the position offers the chance to progress the state of the art in science, as well as interactive with a range of international partners from academia and industry.

Within the context of this postdoc project you will investigate how low-emission multi-machine ship designs can be generated in a sustainable, emission-aware way. Designing such systems is challenging due to the huge number of components that can be chosen. As a result, designs are often for a large extent based on human experience and earlier designs. With the introduction of new types of components (e.g., renewable energy sources, more advanced automatic control modules) it becomes harder for human designers to oversee how these can be best integrated in machine designs. This challenge is enlarged as design requirements are changing: sustainability goals are gaining increasing importance. Traditional ways of designing machines did not take that into account to the extent that future ways of designing should. It therefore now becomes important to investigate automated design methods, that can by themselves propose promising selections of components for ships.

The overall approach is to start from the perspective of a comprehensive set of ship (propulsion and energy) components and real-life operational profiles in which a ship will be operating. Given these, you will investigate how a suitable selection of components can be made based on recent (mathematical) optimization techniques. The approach that you will propose hereby explicitly estimates what the expected (CO2) emissions are for different configurations. In this way, the approach will be able to determine by itself what suitable designs could be for the given operational profiles.

With this project you have the opportunity to directly contribute to the greening and making more sustainable of waterborne transport. Within the European project ISHY, four pilot vessels will be build. Via the industrial contacts, during your project you will have the possibility to assess the potential of your method using realistic data.

Requirements

We are seeking a motivated candidate with expertise and interest in one or more of the following areas:

- (Mathematical) optimization, automatic component selection;
- Energy & propulsion systems, (automatic) ship design;
- Sustainable transport, real-life data and pilots.

You have obtained at least an MSc or a PhD degree or expect to obtain this very soon related to the areas mentioned above. Well spoken and written English and the ability to work in a team is mandatory.

Conditions of employment

TU Delft offers an attractive benefits package, including a flexible work week and the option of assembling a customized compensation and benefits package (the 'IKA'). Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities.

For more information about these positions, please contact prof.dr. Rudy Negenborn, phone: +31 (0)15-2786718, e-mail: r.r.negenborn@tudelft.nl, or dr. Henk Polinder (h.polinder@tudelft.nl).

To apply, please e-mail to r.r.negenborn@tudelft.nl:

- an up-to-date detailed curriculum vitae,
- a letter of application,
- a transcript of grades obtained during MSc studies and/or PhD studies,
- the names and contact information (telephone number and e-mail address) of 2 references.

The letter of application should explicitly summarize: 1) why the project is of particular interest to the applicant and 2) a brief description of the applicant's prior experience in the areas of interest.

This vacancy is open for applications now.

Submit your application at your earliest convenience, but no later than: **June 1, 2019.**