Announcement of NTNU-CSC PhD Scholarship:

Long-term resilience assessment of coastal infrastructure assets based on structural health monitoring

Type of scholarship: PhD scholarship

Period of the scholarship: August 2022 – July 2025

Short description of the scholarship: Critical transport infrastructure such as bridges, harbors and ferry docks are vital assets in ensuring community resilience in case of extreme disruptive events such as windstorms. In coastal regions, total or partial loss of functionality of the structures can be severely disruptive as such structures are often critical links in the transport network, which needs to be fully operational after an extreme event. As the coastal regions get more exposed to more severe windstorms owing to the effects of the climate change, resilience assessment of the aging coastal infrastructure becomes critically important. Accurate estimation of the long-term resilience, on the other hand, relies on the efficient and effective use of both the environmental and structural health monitoring (SHM) data available.

The PhD project will focus on developing frameworks for long-term resilience assessment of critical coastal infrastructure, especially suited for the conditions in Norway. A wide range of data will be utilized to assess the environmental hazard and the structural performance of the considered assets.

The PhD project will have the following tasks:
- Statistical modeling of the environmental hazard on the selected infrastructure object based on codes and standards, supported by data
- Demand and capacity calculations, FEM modeling and model updating based on SHM data
- Vulnerability and resilience assessment using SHM data

Qualification and requirement:
- Master degree in one of the following fields: civil, structural, aerospace, reliability, marine or ocean engineering. Applicants with different background will be considered given that they demonstrate excellent statistics/data analysis skills with interest in structures. Diplomas, transcripts, and certificates proving academic excellence should be provided.
- Preferred criteria (knowledge or practical experience in at least two of the following areas are sought after):
- Structural dynamics
- Structural health monitoring
- Structural reliability
- Wind engineering
- Data analysis / programming

In addition, for all applicants the following applies:

- Fluent English language, both written and spoken with certificates of TOEFL minimum 95 or IELTS minimum 6.5
- Chinese citizenship documents (copy of his/her passport or national ID of P.R. China)
- CV
- A motivation letter

**Deadline for submission of application:** 15th February 2022

**Scholarship:** 17,000 NOK/month for a period of up to 36-48 months

*According to the NTNU-CSC agreement*

CSC will provide a living stipend, currently 12,500 NOK per month for a period of up to forty-eight (48) months, and a round-trip international airfare between China and Norway. NTNU will provide a monthly additional funding for a period of up to forty-eight (48) months, which combined with the CSC living stipend ensures the sufficient income (currently minimum 17,000 NOK per month) required by NTNU. No tuition fees will be charged for PhD candidates at NTNU.

**Supervisor info:**
Aksel Fenerci, Associate Professor
Department of Ocean Operations and Civil Engineering, NTNU
aksel.fenerci@ntnu.no

Torodd Skjerve Nord, Associate Professor
Department of Ocean Operations and Civil Engineering, NTNU
torodd.nord@ntnu.no

Ole Øiseth, Professor
Department of Structural Engineering, NTNU
ole.oiseth@ntnu.no

Email and contact information for where to send the application:
aksel.fenerci@ntnu.no, Aksel Fenerci
torodd.nord@ntnu.no, Torodd Nord