PhD Candidate - A Cross-modal Integrated Sensor Fusion System for Fatigue and Awareness Asessment in Demanding Marine Operations

The Mechatronics lab at Faculty of Marine Technology and Operations has vacant one PhD position which runs over 3 years (or 4 years including 25 % teaching). The position is funded by SFI Mechatronics. This is a resarch position that will lead ut to the doctoral degree (PhD) in addition to contributing to professional development at the faculty. The workplace is at NTNU in Ålesund, but the candidate will also participate in an organized doctoral degree program at NTNU in Trondheim. The candidate will, together with the academic research group at the college and research teams in the collaborative companies, develop knowledge within the specified area of resarch.

SFI Offshore Mechatronics

The research center SFI Offshore Mechatronics officially commenced on April 1, 2015. The vision for the SFI is to become the international knowledge and research hub for the next generation of advanced offshore mechatronic systems for autonomous operation and condition monitoring of topside drilling system under the control of land-based operation centers, to ensure safe and efficient operation in deeper water and in harsh environments.

Description of the PhD study

Marine operations are becoming more and more demanding. The complexity increases even further taking into account that these operations require a much greater coordination between professionals during e.g. ship maneuvering and crane, winch and ROV operations, often in coordinated operations with a rig and other ships.

Currently a number of studies conducted by various maritime organizations reported that more than 75 % of accidents of ships worldvide are due to human and organizational errors. As a result, it is a matter of prority to look into the human element in order to ensure safety and efficiency during marine operations. Mitigating risk due to the human element is of vital importance.

There is an urgent need to develop methods and tools that will help us understand human operator's working situation with greater accuracy and therefore a more reliable modelling and simulation of risk assessment during a demanding marine operation.This is the most important knowledge that needs to be dentified in this PhD study. Multiple sensors are preferred for monitoring different body parts of the operator, from where fatigue or loss of concentration can easily manifest. Furthermore, multi-sensor fusion, as the core of this study, will be used to increase the quality and the usefulness of sensor data, generating more accurate and complete model description for marine operation performance assessment. Note that the system is application oriented. Therefore, the system should be expandable according to demands.

For this PhD study, it will mainly focus on applications for marine operations, including

- Real-time behaviour monitoring
- Fatigue/risk assessment
- Behaviour analysis

Qualifications

- MSc in automation, or computer science, with an average grad B or better measured in ECTS (European Credit Tranfer System) grades, or an education at the equivalent level
- Good programming skills
- Good theoretical and analytical skills
- Ability to work independently as well as in team
- Keen interest in the wider context of own research and ability to engage in cross-diciplinary teams

Written and oral fluency in English. The following tests can be used as such documentation: TOEFL, IELTS or Cambridge Certificate in Advanced English (CAE) or Cambridge Certificate of Proficiency in English (CPE). Minimum scores are:

- TOEFL: 600 (paper-based test) 92 (Internet-based test)
- IELTS: 6,5 with no section lower than 5.5 (only Academic IELTS test accepted)
- CAE/CPE: Grade B or A

In extraordinary circumstances, formal documentation of language skills can be relinquished. In such cases the candidate's language skills will be assessed in a personal interview.

Extra requirements:

- Know the hardware, peripherals and sensors

- Have knowledge in artificial intelligense, especially the experience related to sensor fusion

Conditions

It is essential that the succesful candidate fills the requriement for admission to a doctoral program. The PhD candidate must work at NTNU in Ålesund and participate in an organized doctoral study. The sucessful candidate will be part of a creative and informal academic environment that places heavy demands on independence, ability to take initiative and to cooperate.

PhD candidates are remunerated in code 1017, starting at wage level 50, currently gross NOK 430 200 before tax. There will be a 2 % deduction to the Norwegian Public Service Pension Fund from the gross wage.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants. The position adheres to the Norwegian Government's policy of balanced ethnicity, age and gender. There are few womein in the faculty and women are encouraged to apply. According to the new Freedom of Information Act, information concerning the applicant may be made public even if the applicant has requested not to be included in the list of applicants.

A CV with full details of tranining and practice must be included in the online application, together with certified copies of diplomas and certificates. Applicants will be invited for interviews in which original diplomas/certificates etc. are expected to be presented

More information about the position can be obtained from Prof. Houxiang Zhang, hozh@ntnu.no.

Tilleggsinformasjon

Arbeidssted: