Personal Statement

To whom it may concern,

This is Yaolin GE, a final year master student from the major of Maritime Engineering at KTH Royal Institute of Technology, currently applying for the doctoral program in "Situation awareness for harbour operations and auto-docking in maritime transport". I would like to explain as follows my motivation for my application, and my advantages among the potential candidates for your consideration.

Thanks to the swift progress of my bachelor's degree, it is glaring that studying and doing research are endeavors I would like to engage in even more. While studying for my BSc in Naval Architecture and Ocean Engineering at Jiangsu University of Science and Technology, not only did I develop a systematic way of solving existing problems in the marine field, but also I did step forward to pursue research related problems to reflect on. Even though not many relevant researches were conducted during this period, I think it gives me an enriched experience of studying as a student and a positive attitude when treating unsolved problems. I pushed myself hard to explore as much as I can, that dedication brought me a national scholarship and an opportunity to take an exchange study in the UK. That exchange study program at University of Strathclyde, which I consider did bring great advantages to me from the perspectives of both academic and personal improvements. The courses I have undertaken there covers diverse aspects of naval architecture and marine engineering, of which my favourite ones are *Seakeeping* and *Manoeuvring*. Particularly the manoeuvring part provoked me about the power of the human brain and the computer brain. For instance, how the equations of motion can be formulated, in which plenty of hydrodynamic derivatives need to be sorted out via either numerical ways or experimental ways. The study atmosphere there which greatly encouraged independent research and innovative ideas had brought me more confidence on my success in a higher level of study and research abroad.

As a result of the strong interest in exploring at a higher level, I urged myself to learn more under an advanced study environment, for which I then pursued my master study within Marine Technology at NTNU. The interdisciplinary study and research environment rewarded me a lot in terms of research skills and personal growth. To sum up, I did not restrict myself only in the traditional maritime engineering field such as from hydrodynamics and structure points of views. Some other relevant courses I did take including electric machinery and underwater technology, stirred me to a more opening horizon, enhanced my utility toolbox when considering a design problem in a multi-perspective way. Electric machinery provided me a comprehensive overview of all electrification aspects on board while underwater technologies led me to another sensing field such as sonar technology, which inspired me to choose the current research topic about signal processing of underwater beacons for AUVs. I feel much more confident about my research and analytical skills thanks to the experience gained at NTNU. On the other hand, I chose KTH as another university within my master program is simply because I would like to broaden my views even further. KTH does satisfy my expectation in many ways. I am now conducting my research by collaborating with the Swedish Maritime and Robotic Centre (SMaRC), where multi-disciplinary researchers work on the same project – LoLo. I am honored to be one of them to take the signal processing part. Through this research experience, I feel more ready and confident in seeking a further doctoral program.

The industry experience I have gained from both my bachelor study and the Joint Nordic Five Tech (N5T) Program seems valuable to me as well. During my bachelor's study, I have been staying in Hudong-Zhonghua Shipyard for one week as a visiting intern, I visited all essential manufacturing centres such as welding centre, stock management centre and ship design centre. Also, I was also invited to visit several shipyards in Finland via N5T program. I acquired all my engineering background necessary to ship building through past experiences.

While my research and internship experiences have largely been outside my proposed field of study, they demonstrate my work ethic, intellectual curiosity, communication skills, and capacity for both independent and teamwork. Besides, my extracurricular activities support my leadership ability and responsibility. Participated actively in undergraduate innovative research projects were rewarding and fun, I gained practical problem-solving skills and analytical skills through conducting experiments, carrying out on-site surveys and post-processing data and so on. On the other hand, acting as an interpreter intern requires more communication skills and managerial skills. Apart from the obvious benefits, took the responsibility of being a Taekwondo instructor taught me the positive outlook of life and promising attitudes towards work.

With this wide range of experiences, I have gradually developed a liking taste in maritime industry. Over the last year, I have had some interactions with some Ph.D. students within maritime field at NTNU, and it has given me a tantalizing glimpse into the life of a graduate student – and it is a life I want to lead. It is also a life I believe I am ready and able to manage, as evidenced by my success in my previous graduate coursework and commitment to research. I develop motivation from the level of responsibility and independence required of a graduate student, and relish the opportunity to prove myself at this level. My research and coursework so far have been quite interdisciplinary, spanning the border of ship design to signal processing, and the potential to continue this sort of study is what first attracted me to NTNU. Looking at the work of the professors in the Department of Ocean Operation and Civil Engineering, I was excited to see the breadth of research which covers multi-displines and immediately identified several professors whose projects particularly interested me. For instance, the bio-inspired robotic research in Mechatronics Lab allures me so much, which again verifies my attitude towards the power of human brain and computer brain. During the past few weeks, I read papers those professors had recently published, solidifying my interest in autonomous marine system, and components of smart maritime in research, which is exactly what I want to do. Pursuing a Ph.D. degree at NTNU, with the department's diversity of research in maritime operation and its strong reputation, will allow me to learn from professors at the top of this new and exciting field. A Ph.D. program will enable me to pursue my research interests to a much greater depth while also expanding my future career opportunities. It is also worth mentioning that joining a community of other like-minded individuals will be a valuable chance for collaboration and personal development. I believe that I am a diligent and highly motivated student and also a well-qualified applicant.

As mentioned at the beginning, I have been aiming to devote myself into the studies and research on autonomous marine system as my research goal. To sum up, I expect to contribute to the practical researches with my professional knowledge and practical skills obtained from the Ph.D. career at NTNU. With full confidence in me as well as the professional training you provide in the program, I believe that my plan will be realized any time soon. Thank you very much for your time and consideration.

Applicant: Yaolin GE Application Ref. No. 174796