東京大学 大学院工学系研究科
School of Engineering The University of Tokyo

School of Engineering, The University of Tokyo

ESEP-G 2020 Personal Statement

T-cens Application No.	000000018046
Name of Applicant	Yaolin Ge
Name of University	KTH Royal Institute of Technology
Department/Faculty	Department of Aeronautical and Vehicle Engineering / School of Engineering Sciences
Degree Program and Years of Study as of June 8, 2020	（ ）Bachelor's （X）Master's （ ）Doctoral （ ）Other （ ）1st （X）2nd （ ）3rd （ ）4th

1st choice Laboratory (Name of Professor)	Program Period (MM/DD/YY)
Laboratory for automotive CFRTP (Professor Jun Takahashi)	6 / 8 /2020 ～ 7 / 17 /2020
2nd choice Laboratory (Name of Professor)	Program Period (MM/DD/YY)
Koshizuka-Shibata Laboratory (Professor Seiichi KOSHIZUKA)	6 / 8 /2020 ～ 7 / 17 /2020
3rd choice Laboratory (Name of Professor)	Program Period (MM/DD/YY)
Mitsuishi Harada Laboratory (Mamoru MITSUISHI & Kanako HARADA)	6 / 8 /2020 ～ 7 / 17 /2020

Explain your motivations for working in the laboratory you have selected, making clear your purpose, topic of study, and/or research.
What do you hope to gain from this experience?
Explain your technical qualifications and briefly highlight any skills/experiences that may be helpful in conducting your research.

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. At present, I am doing my master's degree project within the marine autonomous system at KTH. I am willing to pursue further Ph.D. research opportunities within smart maritime and simulation-based research after master's study. I would like to explain as follows my qualification for my application.

I have been involved with the design project for the 2nd generation Maribot Vane which is an autonomous sailing boat developed at KTH. I was part of the steering group in which we developed a new steering system, including a rudder and a flap. They were made of glass fibre and carbon fibre respectively, the super strong resultant performance with tiny weight impressed me a lot. That is the reason why I choose CFRTP Lab to further brush up my understanding of composite material, which I do believe that it has a promising future. I wish I could seize this opportunity to interact with professors and fellow students from CFRTP laboratory to further expand my horizon to a higher level.

When I was taking my exchange year at NTNU in Norway, I studied the simulation-based design course which engaged me by its high-fidelity simulation cases demonstrated during lectures as well as other activities. Simulations such as ice-structure interaction, wave impact and so on. Are quite impressive and informative, that leads to the decision of choosing Koshizuka-Shibata Lab as my second option. As shown in my curriculum vitae, I have several course projects regarding composite materials, also applied programming skills such as C/C++, Python obtained during the academic work in previous studies.

I have also been involved in a summer campus training program held in Peking University, in which I programmed a Yanshee robot to dance following human motion by applying openpose algorithms.

By attending this ESEP-G summer program at UTokyo, I will brush up my understanding of these fields to a deeper level and this will pave the way for the upcoming research within these fields.

Please describe problems or issues that are of particular interest to you. Feel free to include items from everyday life, your field of research, and/or past personal experiences.
Additionally, describe how you approach and solve problems.

I am passionate about solving challengeable engineering problems, during the past experience, I gradually developed a liking taste of the advanced technology such as artificial intelligence kind of cutting-edge technologies. They do not just make our life much easier, but also much smarter. Still, there is a huge potential that this sort of technology can be applied to many industries. One of my favourite is the smart maritime, which is also my proposed field of research. As the old saying appeared on the official website of the CFRTP laboratory, “if I cannot reduce the car weight, I do not understand CFRP well enough”, that can be also valid if the car is replaced by naval architectures, such as boat, yacht, or other ocean structures. During the study here at KTH for my first semester, I have tasted the power of composite materials throughout my design project for the sailing boat. In our design project, the lightweight requirement allowed only two people to carry the entire boat, which pushed us to use composite material without losing any strength performance. We finally achieved it by combining using glass fibre and carbon fibre for different components out of the consideration of budget. The outcome is quite impressive, we tested the boat by having two sail trials in Stockholm surrounding water areas. That expanded my horizon quite a lot, also enriched my experience of using composite materials.

I would really like to thank the opportunity provided by KTH to develop the new autonomous sailboat, during the project, many problems have occurred, from which I learnt dozens of valuable skills including engineering communication skills, practical skills, and experimental skills. The way I did to approach and solve a problem is first brainstorming all possible solutions, and then apply some engineering analysis tools to guide the selection phase, afterwards, some potential ideas can be verified via experiments or simulations, which can provide a firm understanding of such a concept. More importantly, complex problems might have some iterative process to reach its ultimate goal, which thus can be essential steps in my problem-solving procedure.