

As I complete my visit to the United States as a HIAS Ashford Scholar, I would like to express my deepest gratitude for the opportunity to be a recipient of such a prestigious scholarship. My participation in the MIT Sea Grant program has been both enriching and inspiring, and I am pleased to share some reflections on the research and experiences I gained during my time at MIT, as well as how this scholarship has shaped my career aspirations.

The HIAS Ashford Scholarship provided me with the invaluable opportunity to engage with MIT's vibrant academic community and immerse myself in advanced ocean engineering research. Interacting with researchers and mentors from diverse backgrounds deepened my understanding of how cutting-edge research is conducted and enhanced my sense of responsibility to contribute meaningfully to the global scientific community. The research projects I participated in fueled my passion for hydrodynamics and fluid mechanics while introducing me to innovative approaches for addressing challenges within the areas of my research interests.

During my time at MIT, I was involved in several research projects. First, in the course of designing efficient propulsion systems, I worked on biomimetic propulsion. In particular, inspired by the high propulsive efficiency generated by marine animals' tail movements, this concept has the potential to significantly reduce carbon emissions in the maritime industry. Additionally, I conducted experiments at the MIT Tow Tank on artificial reefs designed to reduce the amplitude of incoming waves for storm energy dissipation. I also processed particle image velocimetry images to extract training data for turbulence simulation using Physics Informed Neural Networks (PINNs) at the Intelligent Tow Tank. Last but not least, I contributed to forecasting Vortex-Induced Vibrations (VIV) of flexible cylinders using machine learning, which is crucial for performance prediction in offshore structures.

This scholarship played a critical role in shaping my career plans. My exposure to these diverse research projects has confirmed my initial hypothesis of integrating computational fluid dynamics with machine learning to achieve better predictive performance in marine applications. I am now more determined than ever to continue my studies in these interdisciplinary fields, with the long-term goal of developing innovative solutions that address the global climate crisis and make impactful contributions to ocean engineering.

In conclusion, the HIAS Ashford Scholarship has been a defining moment in my life. Completing this scholarship has equipped me with the knowledge, experience, and motivation to pursue my dream of conducting research in fluid mechanics. Even more profoundly, being a recipient of such a patriotic act inspires me to contribute to my country's progress in every way possible. Throughout my academic and professional journey, I will always remember how much I owe to HIAS.

Always grateful to Professor Nicholas and Robert Askounes Ashford for his generous donation,
Always grateful to HIAS,
Always grateful to Professor Michael Triantafyllou for his invaluable guidance.

Respectfully and humbly,
Papakalodoukas Ioannis