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EDUCATION

Doctor of Philosophy, Smart Vehicle Engineering

(02/2022 – Expected 02/2026)

KONKUK UNIVERSITY (KU), Seoul, Republic of Korea

Thesis: *From Wings to Fins: Bioinspired Robotics in Flying and Swimming Systems*

Committee members (expected): Jin Hwan Ko (Chair), Kim Ji Hoon, Goo Nam Seo, Kang Taesam, Park Hoon Cheol

Outcome: (As of April 2025)

One co-authored journal article on a fast-swimming robot (2023).

Two first-author journal articles on Martian flapping-wing stability (2023) & feasible gliding of the flying-fish-like robot (2024).

Courses: Robot Kinematics, Numerical Analysis, Optimal Control Theory, Elasticity.

GPA: 4.00/4.00

Master of Science, Smart Vehicle Engineering

(02/2019 – 02/2021)

KONKUK UNIVERSITY (KU), Seoul, Republic of Korea

Thesis: *Investigation of stability and aerodynamic performance of a flapping-wing micro air vehicle in hover using three-dimensional computational fluid dynamics analyses.*

Committee members: Kim Sang Ho (Chair), Jung Sung Nam, Park Hoon Cheol (supervisor)

Outcome:

One first-author journal on comparative stability analyses for two flappers using different flapping-wing mechanisms (2021).

One first-author journal on aerodynamic improvement of a flapping-wing robot (2021).

Courses: Finite Element Method (FEM), Advanced FEM, Structural Dynamics, Microsystem.

GPA: 3.89/4.00

Bachelor of Engineering, Mechanical and Aerospace Engineering

(09/2013 – 08/2018)

HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY (HCMUT), Vietnam

5-year Vietnam–France Excellent Engineer Training Program (PFIEV), accredited by France's CTI and eligible for the EUR-ACE

Master's label (ENAE). Total: 274 ECTS.

Thesis: *Computational approach on the aerodynamics of UAV combining fixed wing and three propellers.* **Graded 9.07/10**

Committee members: Vu Ngoc Anh, Nguyen Tien Anh, Ngo Dinh Tri, Le Thi Hong Hieu (supervisor)

Outcome: **One** first-author international conference paper (2018).

Courses: Aerodynamics, Aircraft Propulsion, Combustion, Computational Fluid Dynamics, Aircraft Design, Helicopters, Flight Mechanics, and Strength of Materials.

GPA: 3.18/4.00

HONORS AND AWARDS

Doctoral Fellowship, KU, Republic of Korea (2022 – 2026).

Graduate Research Assistant Fellowship, KU, Republic of Korea (2019 – 2021).

Research Assistant Fellowship, HCMUT, Vietnam (2018 – 2019).

Best Paper Award, 18th International Conference on Intelligent Unmanned Systems (ICIUS), Japan (2022).

Merits for Exceptional Academic Students, KU, Republic of Korea (50%, 2019 – 2021 & 2022 – 2024).

Excellent Student of HCMUT, Vietnam (120% tuition waiver in 2018).

Outstanding Scholar Tuition Grant, HCMUT, Vietnam (100% in 2014 and 110% in 2017).

PROFESSIONAL SERVICES

Reviewer, Journal of Aeronautics Astronautics and Aviation.

Reviewer, International Journal of Intelligent Unmanned Systems.

UNIVERSITY SERVICES

Teaching Assistant

Assisted in grading assignments (KU): Basics of mechanics (Fall, 2020), Finite Element Method (Spring, 2025).

Facilitated students understanding assignments during lectures (HCMUT): Fluid Mechanics (delivered in English, 2018).

Research Assistant

Co-supervised two junior students on their capstone projects during Fall, 2018 (HCMUT).

Project 1: Aerodynamic analyses of a hybrid design UAV in forward flight using OpenFOAM.

Project 2: Numerical simulation of a tricopter in a forward flight using virtual blade element theory with OpenFOAM.

Outcome: **Two** co-authored conference papers (2019 & 2023); **Two** second-authored journal articles (2020 & 2024).

TECHNICAL SKILLS

Simulation and Post-Processing Tools: ANSYS-Fluent, CFD-Post, OpenFOAM, ParaFoam

CAD and Development Tools: SolidWorks, AutoCAD, Visual Studio, VS Code

Meshing Generators: ANSYS-ICEM, Salome, snappyHexMesh

Image Processing: Digitalizing Tool-DLTdv, pixel-based analysis
Relevant Tools: Microsoft Office, Adobe Photoshop, Adobe Media Encoder
CNC Equipment & Milling Tools: Mill, Match3Mill, CNC machine
3D Printing Technologies: Cubicreator, 3D Printer
Molding Techniques: Silicone Molding
Programming Languages: MATLAB, C++, Python
Web Development: HTML, CSS

JOURNAL ARTICLES

1. Le, T.H.H., **Nguyen, K.**, Vuong, T.H.N., **2024**. [Numerical analysis for aerodynamic characteristics of the unmanned aerial vehicle \(UAV\) in forward flight](#). Journal of Aeronautics, Astronautics and Aviation, 56, 1081, 2024 (Second author is the main contributor).
2. **Nguyen, K.**, Ha, G., Kang, T., Park, H.C., **2024**. [Analysis of hovering flight stability of an insect-like flapping-wing robot in Martian condition](#). Aerospace Science and Technology, 152, 109371,
3. **Nguyen, K.**, Park, H.C., **2023**, [Feasibility study on mimicking the tail-beating supported gliding flight of flying fish](#). Ocean Engineering, 287, 115745.
4. Pham, T.H., **Nguyen, K.**, Park, H.C., **2023**. [A robotic fish capable of fast underwater swimming and water leaping with high Froude number](#). Ocean Engineering, 268, 113512.
5. **Nguyen, K.**, Au, L.T.K., Phan, H.V., Park, H.C., **2021**. [Comparative dynamic flight stability of insect-inspired flapping-wing micro air vehicles in hover: Longitudinal and lateral motions](#). Aero. Scie. and Tech, 119, 107085.
6. **Nguyen, K.**, Au, L.T.K., Phan, H.V., Park, S.H., Park, H.C., **2021**. [Effects of wing kinematics, corrugation, and clap-and-fling on aerodynamic efficiency of a hovering insect-inspired flapping-wing micro air vehicle](#). Aerospace Science and Technology, 118, 106990.
7. Tran, D.K.K., **Nguyen, K.**, Le, T.H.H., Nguyen, N.H., **2020**. [Numerical simulation for the forward flight of the tri-copter using virtual blade model](#). Journal of Advanced Research in Fluid Mechanics and Thermal Sciences, 67, 1, 1-32.

CONFERENCE PAPERS

1. **Nguyen, K.**, Ha, G., Park, H.C., [Design and demonstration of a high-speed aquatic swimmer using tail-beat propulsion](#), Int'l Conf. of Intelligent Unmanned System (ICIUS), Bali, Indonesia, Aug. 20-24, 2025. **(Presenter)**
2. **Nguyen, K.**, Ha, G., Park, H.C., [Design and fabrication of high-thrust tail-beating mechanism for fish-inspired swimming robot](#), Int'l Conf. of Intelligent Unmanned System (ICIUS), Bandung, Indonesia, Aug. 20-24, 2024. **(Presenter)**
3. **Nguyen, K.**, Park, H.C., [Analytical and experimental performance verifications of a fast-swimming robotic fish](#), Int'l Conf. of Intelligent Unmanned System (ICIUS), Bandung, Indonesia, Aug. 20-24, 2024. **(Presenter)**
4. **Nguyen, K.**, Kang, T.S., Park, H.C., [Hovering characteristics of an insect-like flapping-wing robot on Mars](#), Proceedings of Korean Society for Aeronautical and Space Sciences (KSAS), Korea, Nov. 16, 2023. **(Presenter)**
5. **Nguyen, K.**, Ha, G., Park, H.C., [Preliminary design of a fish-like fast robot by scaling of the KUFish](#), Int'l Conf. of Intelligent Unmanned System (ICIUS), Adelaide, Australia, July 5-7, 2023.
6. **Nguyen, K.**, Park, H.C., [Roles of hydrodynamic forces generated by tail-beating motion in gliding flight of flying-fish-mimicking robot](#), Int'l Conf. of Intelligent Unmanned System (ICIUS), Adelaide, Australia, July 5-7, 2023. **(Presenter)**
7. Ha, G., **Nguyen, K.**, Park, H.C., [Thrust generation by flapping-wings under the low-air density condition](#), Int'l Conf. of Intelligent Unmanned System (ICIUS), Adelaide, Australia, July 5-7, 2023.
8. Le, T.H.H., **Nguyen, K.**, Tran, M.H., [Numerical analysis for aerodynamic characteristics of the unmanned aerial vehicle \(UAV\) in forward flight](#), Southeast Asia Workshop on Aerospace Engineering (SAWAE), Thailand, 2023.
9. **Nguyen, K.**, Pham, T.H., Park, H.C., [Numerical investigation of hydrodynamics for a fish-like robot under undulatory forward swimming](#), Proceedings of the Korean Society of Mechanical Engineers Annual Meeting, Jeju, Korea, 2022. **(Presenter)**
10. Ha, G., **Nguyen, K.**, Park, H.C., [Prediction of flapping wing characteristics in ultra-low air-density condition using a dynamic model](#), Int'l Conf. of Intelligent Unmanned System (ICIUS), Tokushima, Japan, Aug. 9-12, 2022.
11. Pham, T.H., **Nguyen, K.**, Park, H.C., [Leaping out of water of the KUFish: Prediction and demonstration](#), ICIUS, Tokushima, Japan, Aug. 9-12, 2022. (Selected best paper award)
12. **Nguyen, K.**, Pham, T.H., Park, H.C., [Numerical estimation of hydrodynamic thrust using the measured tail-beating kinematics of a fish-like robot](#), ICIUS, Tokushima, Japan, Aug. 9-12, 2022. **(Presenter)**
13. **Nguyen, K.**, Au, L.T.K., Phan, Hoang Vu, Park, H.C., [Wing kinematics modulation in an insect-like tailless flapping wing micro air vehicle \(FW-MAV\) for higher aerodynamic efficiency](#), ICIUS, Vietnam, Aug. 25-27, 2021. **(Presenter)**
14. Dao, T.T., **Nguyen, K.**, Park, H.C., [CFD and FSI-based parametric study on tail fin for high-speed underwater locomotion](#), ICIUS, Vietnam, Aug. 25-27, 2021.
15. **Nguyen, K.**, Au, L.T.K., Park, H.C., [Three-dimensional wing kinematics for improved aerodynamic performance of insect-like flapping-wing micro air vehicle](#), KSAS, Korea, 2020. **(Presenter)**
16. Au, L.T.K., **Nguyen, K.**, Park, H.C., [Effect of wing corrugation on aerodynamic performance in 3D flapping wings](#), Proceedings of Korean Society for Aeronautical and Space Sciences (KSAS), Korea, 2019. **(Presenter)**
17. Tran, D.K.K., **Nguyen, K.**, Le, T.H.H., [Numerical simulation for the forward flight of the tri-copter using Virtual Blade Model](#), Southeast Asia workshop on Aerospace Engineering (SAWAE), Malaysia, 2019.
18. **Nguyen, K.**, Nguyen, N.H., Le, T.H.H., [Numerical approach for the vertical take-off and landing UAVs using the virtual blade model](#), Southeast Asia workshop on Aerospace Engineering (SAWAE), Thailand, 2018. **(Presenter)**