Khanh Nguyen (He/Him)

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EDUCATION

Doctor's Degree in Smart Vehicle Engineering (February 2022 - Expected February 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)

- **01** co-authored journal article on a fast-swimming robot (2023).
- **02** first-author journal articles on Martian flapping-wing stability (2023) & feasible gliding of the flying-fish-liked design (2024).

Courses: Robot Kinematics, Numerical Analysis, Optimal Control Theory. **GPA: 4.00/4.00.**

Master's Degree in Smart Vehicle Engineering (February 2019 - February 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
Outcome:

- **01** first-author journal on comparative stability analyses for two flappers using different flapping-wing mechanisms (2021).
- **01** first-author journal on aerodynamic improvement of a flapping-wing robot (2021).

Courses: Finite Element Method (FEM), Advanced FEM, Structural Analysis. **GPA: 3.89/4.00.**

Bachelor's Degree in Mechanical and Aerospace Engineering (September 2013 - August 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 (ENAEE). Total: 274 ECTS.
Thesis: *Computational approach on the aerodynamics of UAV combining fixed wing and three propellers.* **Graded 9.07/10**
Outcome: **01** first-author internaltional conference paper (2018).
Committee members: Vu Ngoc Anh, Nguyen Tien Anh, Ngo Dinh Tri, Le Thi Hong Hieu (supervisor)
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).
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: **02** co-authored conference papers (2019 & 2023); **02** 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
Software: 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++
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. 6s, 1081-1097, 2024*. (The second author is the main contributor)
2. **Nguyen, K.**, Park, H.C., 2023, Feasibility study on mimicking the tail-beating supported gliding flight of flying fish. Ocean Engineering, 287, 115745.
3. 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.
4. **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.
5. **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. *Aero. Scie. and Tech*, 118, 106990.
6. 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.H., 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)**
2. **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)**
3. **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)**
4. **Nguyen, K.**, Ha, G.H., 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.
5. **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)**
6. Ha, G.H., **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.
7. 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.
8. **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)**
9. Ha, G.H., **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.
10. 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)
11. **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)**
12. **Nguyen, K.,** Au, L.T.K., Phan, Hoang Vu and 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)**
13. Dao, T.T., **Nguyen, K.,** and Park, H.C., CFD and FSI-based parametric study on tail fin for high-speed underwater locomotion, ICIUS, *Vietnam*, Aug. 25-27, 2021.
14. **Nguyen, K.,** Au, L.T.K., and Park, H.C., Three-dimensional wing kinematics for improved aerodynamic performance of insect-like flapping-wing micro air vehicle, KSAS, *Korea*, 2020. **(Presenter)**
15. 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)**
16. 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.
17. **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)**