

Khanh Nguyen (He/Him)

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EDUCATION

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- Doctor of Philosophy, Smart Vehicle Engineering | GPA: 4.00/4.00** (02/2022 – Expected 02/2026)
Konkuk University (Ku), Seoul, Republic of Korea
Courses: Robot Kinematics, Numerical Analysis, Optimal Control Theory, Elasticity
- Master of Science, Smart Vehicle Engineering | GPA: 3.89/4.00** (02/2019 – 02/2021)
Konkuk University (Ku), Seoul, Republic of Korea
Courses: Finite Element Method (FEM), Advanced FEM, Structural Dynamics, Microsystem
- Bachelor of Engineering, Mechanical and Aerospace Engineering | GPA: 3.18/4.00** (09/2013 – 08/2018)
Vietnam National University, University of Science and Technology, Ho Chi Minh (VNU – HCMUT)
 - The five-year France Excellent Engineer Training Program in Vietnam (PFIEV), accredited by France's CTI, is awarded the EUR-ACE Master's label and comprises a total of 274 European credits (ECTS).
Courses: Aerodynamics, Aircraft Propulsion, Combustion, Computational Fluid Dynamics (CFD), Helicopters, Flight Mechanics.

RESEARCH EXPERIENCES

PH.D. PROGRAM, KONKUK UNIVERSITY, SEOUL, REPUBLIC OF KOREA

Project 1: Flapping-wing fast forward flight (ongoing)

Project 2: Design of a fast-swimming robot (ongoing)

Project 3: Flapping flights on Mars

01 first-authored paper published in 2024.

- Investigated stability characteristics of a flapping-wing hover under Martian atmospheric condition using ANSYS-Fluent.
- Studied aerodynamic characteristics of a flapping-wing robot during takeoff under varying ultra-low air densities using ANSYS-Fluent (ongoing).

Project 4: Leaping robotic fish

01 first-authored paper & **01** co-authored paper published in 2023.

- Conducted CFD simulation with ANSYS-Fluent to estimate body drag using measured undulatory swimming kinematics.
- Performed CFD analysis using ANSYS-Fluent to explore the feasibility of gliding in a flying-fish-liked robot. The robot achieves gliding after rapid swimming, leaping out of water, partially supported by submerged tail beating motion in combination with a pair of fixed wings.

M.S. PROGRAM, KONKUK UNIVERSITY, SEOUL, REPUBLIC OF KOREA

Project 1: Aerodynamic improvement

01 first-authored paper published in 2021.

- Numerically proposed an optimal wing kinematics (WK) that can improve aerodynamic performance of a flapping-wing hover by 31%. That proposed WK can maintain lift while reducing drag coefficients. The proposed modification includes distributed wing corrugation along the wingspan, adjusted wing motion, and exclusion of the clap-fling mechanism (2021).

Project 2: Stability of a flapping-wing robot

01 first-authored paper published in 2021.

- Conducted CFD simulation to compare the longitudinal and lateral stability characteristics of two flappers hovering using different stroke-plane-change and trailing-edge-change mechanisms (2021).

GRADUATE RESEARCH, VNU – UNIVERSITY OF SCIENCE AND TECHNOLOGY, HO CHI MINH

Project 1: Aerodynamics of UAV-HOPE (fixed wings in forward flight)

01 co-authored paper published in 2024.

- Investigated the aerodynamics of UAV-HOPE during forward flight using OpenFOAM, with a focus on the lift contribution of the fixed wings.
- Analyzed laminar purple separation and flow detachment along both the chordwise and spanwise positions.

Project 2: Aerodynamics of UAV-HOPE (tricopter frame in forward flight)

01 co-authored paper published in 2020.

- Co-supervised an aerodynamic investigation of the tricopter, considered as the principal frame structure for UAV-HOPE design, during forward flight using Virtual Blade Element implemented in OpenFOAM.
- Developed a program to predict a converged tip path plane angle in forward flight using input parameters such as mass, lift, and drag coefficients of the tricopter.

UNDERGRADUATE THESIS, VNU – UNIVERSITY OF SCIENCE AND TECHNOLOGY, HO CHI MINH

Thesis: Aerodynamics of UAV-HOPE (tricopter frame during takeoff)

01 international conference paper presented at Southeast Asia Workshop on Aerospace Engineering (Thailand, 2018).

- Modelled the geometric characteristics of a 3-rotor propulsion system using commercial rotor blade (PJP-T-L 12x4.5)

- Conducted numerical aerodynamic analyses of a tricopter frame propelled by three rotor blades during takeoff under varying inflow speeds of (0.1, 0.3, 2.0 and 6.0) m/s using the Virtual Blade Model in OpenFOAM.
- At the same speed of 6833 RPM, the CFD-based thrust using Blade Element Theory was 5% lower than the thrust specified by the manufacturer, while the prediction using Blade Element Momentum Theory showed a 12% deviation.

HONORS AND AWARDS

Doctoral Fellowship, KU, Republic of Korea (2022 – 2026).
 Graduate Research Assistant, KU, Republic of Korea (2019 – 2021).
 Research Assistant Fellowship, VNU – 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 VNU – HCMUT, Vietnam (120% tuition waiver in 2018).
 Outstanding Scholar Tuition Grant, VNU – HCMUT, Vietnam (100% in 2014 and 110% in 2017).

PROFESSIONAL SERVICES

Journal reviewer, Journal of Aeronautics Astronautics and Aviation (JAAA, 2023 – 2024)
 Journal reviewer, International Journal of Intelligent Unmanned Systems (IJIUS, 2021)
 Conference reviewer, International Conference on Intelligent Unmanned Systems (ICIUS, 2021)

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 (VNU – HCMUT): Fluid Mechanics (delivered in English, 2018).

Research Assistant

Co-supervised two students on their graduation theses (Doan Tran Kim Khanh & Nguyen Tien Nghi) in 2018 (VNU – HCMUT).

TECHNICAL SKILLS

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

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

Software: Microsoft Office, Adobe Photoshop, Adobe Media Encoder

Meshing Generators: ANSYS-ICEM, Salome, snappyHexMesh

Image Processing: Digitalizing Tool-DLTdv, pixel-based analysis

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, THH, **Nguyen, K**, Vuong, THN, **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, HC, **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, HC, **2023**, [Feasibility study on mimicking the tail-beating supported gliding flight of flying fish](#). Ocean Engineering, 287, 115745.
4. Pham, TH, **Nguyen, K**, Park, HC, **2023**. [A robotic fish capable of fast underwater swimming and water leaping with high Froude number](#). Ocean Engineering, 268, 113512.
5. **Nguyen, K**, Au, LTK, Phan, HV, Park, HC, **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, LTK, Phan, HV, Park, SH, Park, HC, **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, DKK, **Nguyen, K**, Le, THH, Nguyen, NH, **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.