Dev Pradeepkumar Nayak, EIT

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LinkedIn | **Google Scholar** | **Portfolio** | **ResearchGate**

Residence status: Permanent Resident in Canada

EDUCATION

Master of Science (Thesis) in Mechanical Engineering *Jan 2024 - Dec 2025*
Lakehead University, Thunder Bay, CA GPA: 88 % (≈ 3.9 / 4.0)
Thesis: *Computational Investigations On the Hydrodynamic Performance of Active and Passive Tails for Carangiform Swimmers.* **[Preprint]**
Supervisors: Dr. Ali Tarokh, and Dr. Muhammad Saif Ullah Khalid

Bachelor of Science in Mechanical Engineering *Sept 2017 - Dec 2021*
Lakehead University, Thunder Bay, CA
Degree project: *Design and Analysis of a Naturally Aspirated Gasoline Engine in an X-Configuration.***[Video]**
Supervisors: Dr. Ali Tarokh

AREAS OF INTEREST

• Biomimetic Locomotion • Fluid-Structure Interactions • Computational Fluid Dynamics • Nonlinear Dynamics • Aerodynamics • Hydrodynamics

RESEARCH EXPERIENCE

Graduate Research Assistant, **NIERL** *Jan 2024 – Present*
• Performed 2D and 3D FSI simulations in OpenFOAM to evaluate stability, wake topology, and propulsion efficiency in underwater swimmers.
• Developed a custom OpenFOAM solver capable of handling undulatory and flapping-like kinematics with dynamic meshing.
• Streamlined post-processing pipelines to optimize workflow.

INDUSTRIAL EXPERIENCE

Mechanical EIT, **Ontario Shipyards** *May 2021 – May 2022*
• Led and organized design projects involving railcar welding fixtures and engineering drawings for manufacturing.
• Introduced process optimizations that increased manufacturing efficiency and reliability.

TEACHING EXPERIENCE

Teaching Assistant, **Lakehead University** *Jan 2024 – Aug 2025*
• ENGI 5673 – Principles of Management & Leadership

- EMEC 1533 – Mechanics of Materials II
- EMEC 0587 – Compressible Flow
- ENGI 3015 – Engineering Thermodynamics & Heat Transfer

Tutoring **Lakehead University** *Sept 2024 – Present*
Provided academic assistance to 1st–4th year Mechanical Engineering students, reinforcing core concepts and exam preparations.

Side Projects & Voluntary Work *Dec 2024 – Jan 2026*
Assistant Supervisor for Undergraduate Capstone Projects

JOURNAL PUBLICATIONS

(J1) Nayak, D.P., Tarokh, A., Khalid, M.S.U. *Comparative Investigations on Active and Passive Tails of Undulating Swimmers*, under review, 2025. **[Preprint]**

(J2) Nayak, D.P., Tarokh, A., Khalid, M.S.U. *Role of Nonlinear Stiffness in the Performance of a Passively Pitching Caudal Fin of a Carangiform Swimmer*, under preparation, 2025.

POSTER PRESSENTATIONS

(P1) Nayak, D.P., Tarokh, A., Khalid, M.S.U. *"Propulsion from semi-passive flapping tail in carangiform fish-like swimming", Graduate Student Conference, Lakehead University 2025 Research and Innovation Week, Thunder Bay, ON, Canada, 2025.*

HONOURS & AWARDS

Special Entrance Award, Faculty of Engineering (**$1,500**) *2025*
Lakehead Graduate Assistantship *2024 – 2025*