Ioannis Nikiforakis, Ph.D.

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Mechanical engineer with a strong background in internal combustion engines, wind turbines and energy-efficient buildings. I am experienced in computationally implementing applied thermodynamics, heat transfer analysis, computational fluid dynamics, combustion kinetics, stress-strain analysis and fatigue damage determination. I want to make an impact through novel, meaningful work in a fast-paced environment.

Experience

04/2025 – Present	*Dev/Research Engineer 3 – Caterpillar Inc.* Contracted to the Advanced Fluid Dynamics Team through Harvey Nash, Inc. to primarily assess design changes in drivetrain infrastructure through modeling and analysis.
01/2025 - Present	*Visiting Scholar-Stony Brook University* Modeling internal combustion engines and wind turbines in Stony Brook University's Advanced Combustion and Energy Systems Laboratory, under Professor Dimitris Assanis.
05/2022-12/2024 & 05/2021-08/2021 & 05/2018-12/2020	*Research Assistant-SUNY Research Foundation* Worked in projects between Stony Brook University, private corporations, and the US Government. Research involved the wake investigation of an offshore wind farm and the integration of on-site hydrogen production through PEM electrolyzers (Ørsted). Additionally, I modeled a rotary engine with a pre-chamber (UAV) to optimize performance under various loads (LiquidPiston, Inc. and US Air Force). Further work included the hybridization of solid oxide fuel cells with engines (ARPA-E's INTEGRATE, Czero, Inc.).
08/2021-05/2022 & 01/2021-05/2021 & 08/2017-05/2018	*Teaching Assistant-Stony Brook University* Involved in lectures, recitations, lab work, projects, homework and exams in Mechanical Engineering Undergraduate Program Courses: 301 Thermodynamics, 305 Heat & Mass Transfer, 325 Manufacturing Processes, 364 Introduction to Fluid Mechanics, 393 Engineering Fluid Mechanics, and 398 Thermodynamics II.
06/2013-08/2013 & 06/2012-08/2012	*Intern-HARAMIS BROS S.A.* Interned as a mechanical engineer in a Greek water-pump manufacturing company.

Education

Ph.D. in Mechanical Engineering, Stony Brook University, 2024
Dissertation: Understanding the Role of the Internal Combustion Engine for a Hybrid Solid Oxide Fuel Cell Power Generation System

M.Sc. in Sustainable Energy Technology, Delft University of Technology, 2017
Thesis: Determination of Fatigue Assessment of Monopile–Based Offshore Wind Turbines through Fidelity Quantification

Diploma in Mechanical Engineering, National Technical University of Athens, 2014
Thesis: Net-Zero Energy Buildings: A Full Review

Skills

Expert in CONVERGE CFD, Tecplot, ANSYS Chemkin, STAR-CCM+, Fluent, SpaceClaim, EnSight, ParaView, AutoCAD, Aspen Plus, SolidWorks, Microsoft 365, LaTeX, MATLAB, Python, C/C++
Fluent in English, Greek and French | Conversational in Dutch and Chinese (Mandarin)

Publications in Refereed Journals, Conference Proceedings and Awards

Lead author in 3 publications. Awarded the Gerondelis Foundation Graduate Study Scholarship & the Institute for Advanced Computational Science Young Writer's Award.