MARIA KECHRI

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ACADEMIC OBJECTIVE

Seeking a challenging research opportunity in Aerospace and Mechanical Engineering, in the field of machine design, fluid mechanics, materials science and automated control.

EDUCATION

- **National Technical University of Athens (NTUA), Greece** (in progress) Oct. 2017 – July 2022
  BEng. – MEng. in Mechanical Engineering (5-year degree, 300 ETCS)
  Final Average: Current 8.42/10 - Expected 8.8/10 (Excellent)
  Courses: 63 courses including most fields of mechanical engineering (Mechanics, Robotics, Fluid dynamics, Materials etc.)
- **Private school Ellinogermaniki Agogi, Pallini, Greece** Sept. 2014 – July 2017
  High School Diploma - Final Average: 19.5/20 (Excellent)

RESEARCH EXPERIENCE

MEng. Thesis, Machine Design Laboratory (MDL), NTUA Nov. 2021 – Jul. 2022 (expected)

- **Coupled fluid-structure interaction with a crack propagation analysis** (in progress)
  Advisors: Prof. Vasilios Spitas

Undergraduate Researcher, Machine Design Laboratory (MDL), NTUA Sep. 2019 – Jan. 2022

- **Lightweight Clutch Disk Design with a Novel Infill of a Lattice Structure Transformed for Cylindrical Domains** (in refinement state for publication) Sep. 2020 – Jan. 2022
  Summary: Researching for a clutch disk design that combines the advantages of dry and wet friction clutches. Proposing a clutch disk with a lattice core to achieve lower weight and better thermal and damping properties, while ensuring the design's mechanical strength. Presenting a general transformation from cartesian to cylindrical domains for lattice structures in order to avoid damaged parts. Discussing the results for different lattices and proposing improvements for future work.
  Advisors: Prof. Vasilios Spitas
- **MATLAB code development for solving the steady-state, incompressible Navier-Stokes equations for 3D axisymmetric problems with Finite Element method** Feb. 2020 – Sep. 2020
  Summary: Studying the combination of rotational Couette flow and 'squeeze' effect of a fluid between two rotating and approaching cylindrical surfaces. Modeling the problem with the incompressible steady state Navier Stokes equations for 3D axisymmetric problems. Developing a code in MATLAB for solving the problem with the Finite Element method. Testing the code and discussing the results for an application on the fluid between the friction surfaces of wet clutches.
  Advisors: Prof. Christopher Provatidis
- **An introduction to tribology principles and friction models** Sep. 2019 – Feb. 2020
  Summary: Literature reviewing of the friction phenomena that develop between friction surfaces. Researching alternative friction models capable of representing the studied phenomena. Proposing the friction model that is suitable for most applications.
  Advisors: Prof. Vasilios Spitas

HONOURS, AWARDS & RECOGNITION

- **Award by the bequest of Christos Papakyriakopoulos** Nov. 2019
  For achieving the excellent grade of 10/10 in all of the mathematical courses.
- **Scholarship by Iro Georgitsis** Sept. 2018
  5-year long scholarship, provided for one year to only two students from all the polytechnical schools of NTUA, for excellent academic grades, to complete my studies at NTUA (amount: € 3,000 per year).
- **2nd place in the Greek finals of F1 in Schools competition** Apr. 2016
  For the 2nd best team participating in the Greek finals of the F1 in Schools competition. The team was also distinguished for "Research and Development" and "Best Pit Display". Duties included aerodynamic analysis and design.
- **Participation in the 30th National Greek Mathematical Olympiad "Archimedes"** Feb. 2013
  For the distinguished participation in the 3rd phase of the Greek's Mathematical Society competition.

SKILLS

- **Programming Languages Skills**
  Excellent knowledge of C, C++, Fortran and Matlab
- **Program Skills**
  Excellent use of Solidworks, Matlab, Simulink, Microsoft Office and very experienced with ANSYS and CAM software. Able to develop projects with Simul8, EASY, Procast, AERSCREEN, PIPE and Danaos Enterprises.
- **Language Skills**
  Greek (Native Speaker), English (Proficient User: C2), German (Proficient User: C1)
- **Laboratory Skills**
  Participated in laboratory exercises that included:
  Lathe, shielded metal arc welding, press extrusion, sand casting, quench hardening, mill, CNC lathe, 3D printing
  Jominy hardenability test, Vickers hardness test, Tension test, Bulge test
  Electric field mapping, Metal's reduction potential measurement, Diode's characteristics measurement
  Experienced with microscopes, calliper, micrometre, linear variable differential transformer, strain gauge, laser interferometer

KEY PROJECTS

- **Design and analysis of an antenna's automated control system in microcontrollers** 2021
- **Analysis of GE-F118 fighter aircraft engine** ⋮
- **Design and analysis of a multi-rotor's automated control system for agricultural land spraying** 2020
- **Classification of ball bearing defects for machine learning** ⋮
- **Dynamic design, analysis and imbalance response simulation of a steam turbine's blades** ⋮
- **C++ code development for temperature optimization using deterministic methods and cost optimization using evolutionary algorithms of air-chambers for gas storage in space stations** ⋮
- **Design and analysis of a novel stair climber for disabled people** ⋮
- **Analysis of NOx emissions from an anchored containership in the port of Piraeus** ⋮
- **Design and analysis of a riparian pumping station** 2019
- **Performance Evaluation of Combined Heat and Power unit** ⋮
- **C++ code development for the design and analysis of a gas pipeline network** ⋮
- **Design and analysis of dual clutch gearbox for a city car with a Fiat Panda Classic 1.2 motor** ⋮
- **C++ code development for circle's approximation by a Bezier curve with user defined control points** ⋮
- **Design and analysis of a seesaw mechanism** 2018
- **Experimental testing and thermodynamic analysis of a CHP unit with a Solo V161V Stirling engine** ⋮
- **Design, analysis and construction of a miniature F1 car – F1 in Schools competition** 2016
- **Design and analysis of the Antikythera Mechanism and construction with 3D printer** 2015

PROFESSIONAL AFFILIATIONS

- **Livanos N G Maritime Company LTD (Piraeus, Greece)** June 2018 – Aug. 2018
  Creating and organising a thorough and efficient Planned Maintenance System for crew jobs and spare parts onboard, as an employee of Alpha Marine Consulting Ltd.
- **Editing of "12th Grade Mathematical Simulation Problems" by Vasilis Zarafetas** June 2017– Aug. 2017
  Editing part of the mathematics book and checking for grammatical, scientifical, typographical and conceptual mistakes.

HOBBIES & INTERESTS

- **Sports**
  Gymnastics and Rhythmic Gymnastics (6 years for my private school's team)
  Kickboxing and Boxing (4 years for "Drosopoulos Boxing & Kickboxing Team" and for "Panathinaikos")
  Volleyball, Yoga
- **Arts**
  Modern Dance (2 years for "Rhythm and Movement of women's society in Agios Stefanos", certified with Bronze 1 Certificate by the Imperial Society of Teachers of Dancing in London)
  Hip-Hop and Breakdance (6 years for "Ballare Dance Studio" and for my private school's team)
  Painting, Literature