Hikmet Alperen Aydin

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RESEARCH INTEREST

- Applied mathematics
- Fluid mechanics
- Computation
- Complex flows, multi-phase flows, particle-induced flows, turbulence, etc.

EDUCATION

Bilkent University, Faculty of Engineering, Ankara, Turkey 2017–2022

- English Preparatory School: Sep 2017 – Jan 2018
- B.S. in Mechanical Engineering, Senior Student (Jan 2018 – Jun 2022)
  - CGPA: 3.86/4.00 (Ranked as a High Honor student in every semester)
  - Ranking: 2 out of 129 (for CGPA)
- Scholarship:
  - Merit Scholarship (2019 – 2020): 80 %
  - Merit Scholarship (2020 – 2022): 100 %

RESEARCH EXPERIENCE

FluidFrame Lab, Bilkent University Jun 2020 – pres

Undergraduate Researcher

- Currently working on the theoretical analysis of viscoelastic lubrication over a regularly microstructured wall using the homogenization technique under the supervision of Dr. Luca Biancofiore.

University of Genoa, Italy Jun – Aug 2021

Research Intern

- Conducted research under the supervision of Prof. Alessandro Bottaro in the University of Genoa under the Erasmus+ traineeship program.
- Continued working on the research about the theoretical analysis of viscoelastic lubrication over a regularly microstructured wall using the homogenization technique.

SKILLS

- SolidWorks, Python, MATLAB, LaTeX: Advanced
- OpenFOAM, AVR microcontroller, MS Office: Intermediate
- COMSOL Multiphysics: Basic

LANGUAGES

- Turkish: Native
- English: Full professional proficiency – TOEFL iBT: 110/120 (Oct 2021)
- German: Beginner

SELECTED COURSE PROJECTS

Viscoelastic Lubrication in the presence of cavitation

- Using the open source CFD tool, OpenFOAM, a new solver was created by combining RheoTool (a toolbox based on OpenFOAM) with CavitatingFOAM (a cavitation solver included in OpenFOAM), to simulate a viscoelastic lubrication in the presence of a cavitation.
- Conducted with a group of 3 students.

Bridge Optimizer

- Designed and implemented a bridge optimizer package by using the graphical user interface (GUI) in MATLAB, which can optimize 2-dimensional truss structures for a given geometrical and loading constraints through the application of Finite Element Method (FEM). [https://youtu.be /haXhTc _jF6c]
- Conducted with a group of 5 students.

2- Dimensional FEM Package

- Designed and implemented a FEM package with GUI (in MATLAB) that can compute stresses, strains, and displacements in prescribed 2-dimensional domains under various mechanical loadings and geometries, which are defined by users. [https://youtu.be/XPmW_jEfazo]
- Conducted with a group of 5 students.

OTHER EXPERIENCE

Bilkent Mechanical Engineering Society Sep 2019 – Jun 2020
Club Member

- Gave SolidWorks courses to first-year students.

Turkish Aerospace Industries (TUSAS) Inc., Ankara Jul – Aug 2020
Intern

- Designed aircraft wing using CATIA and observed manufacturing processes in one of the biggest companies of Turkey's defense industry, which is ranked as 61 on Defense News magazines Top 100 list (2nd in Turkey).

Power Soccer Wheelchair for People with Disabilities Sep 2021 – Jun 2022
Graduation Project

- Currently working on improving the power soccer wheelchair, a specialized wheelchair for people with physical disabilities to play soccer, under the supervision of Phill Weaver, who is a software engineer at Google, and Prof. Dr Adnan Akay, who is the Provost and chair of the Mechanical Engineering Department at Bilkent University.
- The goal is to move the power soccer wheelchair in every direction so that the players can play more comfortably and perform as many tricks as a real soccer player.

OTHER ACTIVITIES

Basketball Player 2011-2017

- Actively played basketball in Ankara's top junior and youth basketball league.

English Language Center (ELC), Boston- United States Jun - Jul 2017

- Attended an intensive English course at ELC in Boston.