

# YİĞİT GÜNSÜR ELMACIOĞLU

# Senior Mechanical Engineering and Physics Student

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- **♀** İstanbul, TURKEY
- yigitelmacioglu.com

# **LANGUAGES**

English: TOEFL IBT: 104/120 French: Upper Intermediate

Italian: Beginner Turkish: Native

# COMPUTER SKILLS

Python Solidworks MATLAB | Simulink **ROS** 

ANSYS Mechanical | LaTeX

C | HTML/CSS

Blender

ANSYS Fluent | Inkscape

Microsoft Office

# **EDUCATION**

m Boğaziçi University | Mechanical Engineering | Physics (Double Major Program)

September 2017 - Present

♀ İstanbul, TURKEY

- GPA: 3.90/4.00
- Activities: BUMERANG Rocket Team | RASAT CanSat Team | BUSTLab
- Top student in the Department of Mechanical Engineering
- TUBİTAK 2205 Scholarship Undergraduate Scholarship for Science Student
- 0.02% in Nation-wide University Placement Exam in Maths & Sciences

# Galatasaray High School

## September 2012 - June 2017

♀ İstanbul, TURKEY

- GPA: 87.59/100
- Activities: Volleyball Team Captain | Guitarist at student band | Art Club Member

Magnetically Actuated Guidewire Design for MRI Scanners

- 0.02% in Nation-wide High School Placement Exam
- · Equivalent to French Baccalauréat

net in high magnetic fields (B>0.5T).

Ultrahigh Magnetic Field, Submitted

# **PROJECTS**

## June 2022 - Present

\*for more details check my personal website

#### Universite de Lorraine

- ## July Aug 2014
- ♥ Nancy, FRANCE
- Summer University Courses for Foreign Students

#### Institut Lyonnais

- ## July Aug 2013
- ♀ Lyon, FRANCE
- · Certificate of French Studies

# Numerical Simulation of Particle Trajectories in Ion Thruster Grid Region Plasma using a PIC-DSMC Code

Under the supervision of Prof. Metin Sitti and Mehmet Efe Tiryaki, I designed an actuation

mechanism for guidewires using the permanent magnetic field of MRI. The Cosserat rod model is used for soft body mechanics simulation in C++ and ROS with magnetic force and moments.

VSM is extensively used to investigate the continuous magnetization of the permanent mag-

• PUBLICATION: M. Efe Tiryaki, Yigit G. Elmacioglu, Metin Sitti, Magnetic Guidewire Steering at

## January 2022 - Present

• I am working with Prof. Murat Çelik on the Simulation of an Ion thruster grid region using an in-house written plasma physics code in C++. Iterative GMRES and Eigen solvers are used to compute potential values from Poisson's equation. The probabilistic Monte Carlo technique is used for collisions, initial position, and velocity assignments.

# **INTERESTS**

Aerospace | Aeronautics R&D Simulation **Physics** CAD Modelling Robotics

**Problem Solving** 

# Weight Compensation Mechanism for an Elastic Metamaterial

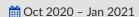
m October 2021 - June 2022

 As the senior design project, I worked with Prof. Çetin Yılmaz on a weight compensation mechanism for an elastic metamaterial that uses inertial amplification to generate low-frequency band gaps.

#### Compressor, Overdrive and Delay Effect Pedals

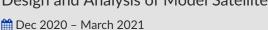
- March 2022 June 2022
- Starting with the schematic of classic effect pedals for electric guitar, the sound difference created by each component such as capacitor, op-amp, OTA, diode, and transistor is observed. Additionally, soldering and various manufacturing techniques are practiced.

#### Tic Tac Toe Player CNC Pen Plotter



 As the term project of ME331-Mechatronics course, with a group of 6 people, we built a CNC Pen Plotter which uses Image Processing. I was in charge of the construction and electronics of the machine as well as testing the Python code.

# Design and Analysis of Model Satellite



 As the leader of the mechanical group of the RASAT CanSat team, I worked on structural parts of the satellite design which involves a controlled landing mechanism.

# 3DOF Simulation of Model Rocket | 🔼

max Apr 2021 - May 2021

 As a member of the Bumerang Rocket Team for TeknoFest, I wrote a MATLAB code to simulate and visualize 10 000ft altitude rocket trajectory considering changing atmospheric conditions and aerodynamic coefficients.

# **EXPERIENCE**

# BUSTLab | Undergraduate Researcher

Ct 2021 - Present

♀ İstanbul, Turkey

• Currently working with Prof. Murat Çelik at Boğaziçi University Space Technologies Laboratory on Plasma Modelling. Additionally, I've extensively researched flight mechanics and created a 6DOF simulation for a plane using MATLAB/Simulink and Flight Gear.

# Max Planck Institute for Intelligent Systems | Undergraduate Researcher

∰ June 2022 - Sep 2022

Stuttgart, Germany

• Worked on a magnetic actuation mechanism via MRI for guidewires to be used in medical applications. Supervised by Prof. Metin Sitti and Mehmet Efe Tiryaki

#### PAKKENS | Internship on Manufacturing

🛗 Jan 2022 - Feb 2022

Pursa, Turkey

• Investigated different manufacturing methods ranging from machining to injection molding. Also contributed to R&D projects on flow simulation of a hydro block of a combi boiler.

# BAYKAR Technologies | Mechanical Engineering Intern

math Aug 2021 - Sep 2021

♀ İstanbul, TURKEY

- CFD Store Separation Analysis from an unmanned aircraft under the effect of propeller for various types of store geometries
- Research on Guidance, Navigation, and Control of a missile and basic programming applications of different Guidance Laws

# Atölye Eğitim | Student Assistant

🛗 Sep 2017 - Dec 2018

**♀** İstanbul, TURKEY

• Conducted one-to-one physics and mathematics classes for senior high-school students preparing for national exams (LYS-YGS for entering college). Also gave problem sessions and prepared videos for solutions to the weekly exams