YİĞİT GÜNSÜR ELMACIOĞLU

Senior Mechanical Engineering and Physics Student

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in yigit-gunsur-elmacioglu   🌐 yigitelmacioglu.com   📅 5 December 1997

LANGUAGES

Turkish: Native
English: TOEFL IBT: 104/120
French: Upper Intermediate
Italian: Beginner

INTERESTS

Aerospace | Aeronautics | Simulation | Physics | CAD | Modelling | R&D | Problem Solving | Robotics

COMPUTER SKILLS

MATLAB | Simulink | C | C++ | Python | Solidworks | ROS | Autodesk Fusion 360 | Blender | ANSYS Fluent | ANSYS Mechanical | LaTeX | Microsoft Office

STUDY ABROAD

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

EDUCATION

🏛 **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
- 2017 LYS 475th out of 2 million students 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
- 2012 SBS 304th out of 1 million students Nation-wide High School Placement Exam
- Equivalent to French Baccalauréat

PROJECTS   *for more details check my personal website*

Magnetically Actuated Guidewire Design for MRI Scanners

📅 June 2022 - Present

- Under supervision of Prof. Metin Sitti and Mehmet Efe Tiryaki, I am designing an actuation mechanism for catheters using permanent magnet of MRI to create magnetic force and torque. Cosserat rod model is used for soft body mechanics. VSM (Vibrating Sample Magnetometer) is extensively used to investigate the continuous magnetization of the permanent magnet in high magnetic fields (above 0.5 Teslas)

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

📅 January 2022 - Present

- I am working with Prof. Murat Çelik on an Ion Thruster simulator C++ code which uses GM-RES method to solve electric potential from Poisson's equation iteratively. Ions and neutrals enter into the analysis region in a probabilistic manner which uses Maxwellian velocity distribution. The aim is to find optimum dimensions for the acceleration and screen grids for given potential difference.

Weight Compensation Mechanism for an Elastic Metamaterial

📅 October 2021 – June 2022

- As the design project of ME429-Mechanical & Thermal Design course, I am working with Prof. Çetin Yılmaz on weight compensation mechanism for an elastic metamaterial which uses inertial amplification to generate low frequency band gaps.

Compressor, Overdrive and Delay Effect Pedals for Electric Guitar |

📅 March 2022 - June 2022

- Starting with schematic of classic effect pedals, 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.

3DOF Simulation of Model Rocket |

📅 Apr 2021 – May 2021

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

Tic Tac Toe Player CNC Pen Plotter | ▶

📅 Oct 2020 – Jan 2021

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

Design and Analysis of Model Satellite |

📅 Dec 2020 – March 2021

- For Teknofest, the goal of the RASAT CanSat Team was to design a model satellite which is capable of controlled landing and has various communication abilities. As the leader of mechanical group, I designed the CanSat by taking dimensional requirements into consideration and conducted 10G shock and load tests using Autodesk Fusion 360.

EXPERIENCE

BUSTLab | Undergraduate Researcher

📅 Oct 2021 – Present   📍 İstanbul, Turkey

- Currently working with Prof. Murat Çelik at Boğaziçi University Space Technologies Laboratory on Guidance, Navigation and Control. I've done extensive research on flight mechanics and simulated a plane in 6DOF using MATLAB / Simulink and Flight Gear. Optimal control, differential games and control of non-linear systems are my recent research topics.

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   📍 Bursa, Turkey

- Investigated different manufacturing methods ranging from machining to injection molding. Also contributed in R&D projects on flow simulation of hydroblock of combi boiler .

BAYKAR Technologies | Mechanical Engineering Intern

📅 Aug 2021 – Sep 2021   📍 İstanbul, TURKEY

- CFD Store Separation Analysis from an unmanned aircraft under the effect of propeller for various type 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 to national exams (LYS-YGS for entering college). Also gave problem sessions and prepared videos for solutions of the weekly exams