Karlo Habek

Student · Teaching assistant · Mechatronics Technician

I am a third-year student at the Faculty of Mechanical Engineering and Naval Architecture (FSB / FAMENA) in Zagreb, specializing in mechatronics and robotics.
Alongside my studies, I work as a teaching assistant for the courses Mathematics 1 and Mathematics 2 from the first year at FSB.
I proudly hold the title of Mechatronics Technician, obtained upon completing the corresponding program at Ruđer Bošković Technical School in Zagreb.

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GOALS

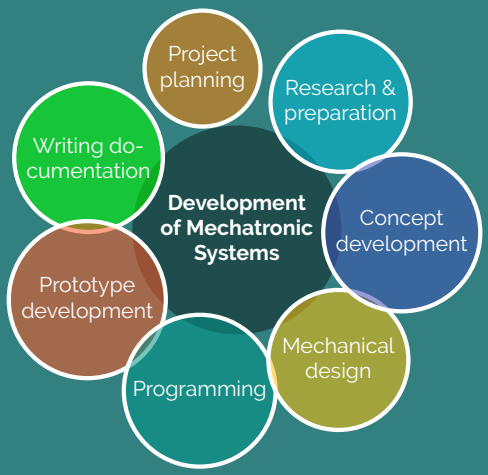
I am seeking opportunities for professional development and acquiring relevant skills from experienced industry professionals.

Development projects are not only obligations for me but also a hobby. I feel particularly satisfied when a project has a certain level of complexity, and its completion brings real progress.

I strive for perfection in results and optimization of the work process, but I have no problem adapting to real conditions if they do not allow for it.

It is important for me to utilize my work time in the most productive way possible. I see no purpose in procrastination but rather aim to be as efficient as possible.

SKILLS



3D modeling	★★★★★
Technical drawing	★★★★★
Programming	★★★★★
Rendering	★★★★★
PCB design	★★★★★
Precision soldering	★★★★★
Wiring	★★★★★
Documentation	★★★★★
Calculation	★★★★★
Learning and adaptation	★★★★★
Planning	★★★★★
Assembly	★★★★★
Graphic solutions	★★★★★
Idea generation	★★★★★

WORK EXPERIENCE

Student internship
DOK-ING · Zagreb, Croatia
I completed a one-month student internship at DOK-ING after my second year of studies. I worked in the development department, in the team for electronic subsystems and electronic control. Most of the work I performed during the internship involved programming an ESP32 microcontroller. I cannot provide more details about my work due to a signed confidentiality agreement.

High School Internships, Student Job, and High-school Final Project
Institute for Nuclear Technology · Zagreb, Croatia
I completed two high school internships at INETEC, each lasting for 3 weeks, and worked a student job for approximately a month and a half. Additionally, in collaboration with INETEC, I designed and constructed a coil winder as my final project in high school. Unfortunately, I am not able to provide detailed descriptions of the tasks I performed during the internships and student job due to signed confidentiality agreements.

High School Internship
Franck · Zagreb, Croatia
During my three-week high school internship at Franck, I worked in the maintenance department. The job was not particularly demanding, but it provided me with the opportunity to experience the operation of an industrial manufacturing plant for the first time. During this internship, I deepened my knowledge of relay technology by performing various connections with different types of relays.

High School Internship
Kraš · Zagreb, Croatia
During my three-week high school internship at Kraš, I worked in the pneumatic maintenance department. This internship provided me with insight into Kraš's manufacturing industrial plant. During the internship, I serviced and cleaned various types of pneumatic cylinders, linear and rotary actuators, and vacuum elements. I also tested basic connections for their control.

Student Job
FSB / FAMENA · University of Zagreb, Croatia
I am currently employed as a teaching assistant for the courses Mathematics 1 and Mathematics 2 at the Faculty of Mechanical Engineering and Naval Architecture. I have held this position throughout my second and third year of study. My job involves providing instructions for these courses to other students.

FORMAL EDUCATION

2018 - 2022

Mechatronics Technician
Ruđer Bošković Technical School (TSRB) · Zagreb, Croatia
I graduated from the Technical School Ruđer Bošković, specializing as a mechatronics technician, distinguishing myself as one of the top students with only one grade of 'B' (4) in four years of schooling. I won first place in the school mathematics competition in my final year, as well as in the inter-school competition in pneumatics and electropneumatics as part of the Ruđer Bošković Regional Competence Center (RCK). During my education, I acquired numerous practical technical skills, including electrical installation assembly, PCB board production, relay technology wiring, PLC and microcontroller programming, working with pneumatic and hydraulic systems, 3D printing, turning, writing G-code, and operating a Kuka industrial robot. Additionally, I mastered working with programs such as AutoCAD, Fusion 360, CATIA, EAGLE, and FluidSIM. The preparation for the state graduation exam was exceptionally thorough, as demonstrated by my results – I achieved 59/60 points in higher-level mathematics and 58/60 in physics.

LANGUAGES

Croatian	Native language
English	Proficient knowledge
German	Limited knowledge I studied it for several years in elementary school and I don't remember everything I once knew.

SOFTWARE

Fusion 360	★★★★★
AutoCAD	★★★★★
Catia	★★★★★
SolidWorks	★★★★★
Eagle	★★★★★
Visual Studio Code	★★★★★
Visual Studio	★★★★★
Mikrochip Studio	★★★★★
Inkscape	★★★★★
MS Office	★★★★★
LaTeX	★★★★★
Overleaf	★★★★★
TexStudio	★★★★★
Logo! Soft Comfort	★★★★★
FluidSim	★★★★★
Step7-Micro/Win	★★★★★
Altium Designer	★★★★★
Matlab	★★★★★
ROBOGUIDE	★★★★★

PHILOSOPHY

Success is a few simple disciplines, practiced every day; while failure is simply a few errors in judgment, repeated every day.
– Jim Rohn

If you go to work on your goals, your goals will go to work on you. If you go to work on your plan, your plan will go to work on you. Whatever good things we build end up building us.
– Jim Rohn

Success is neither magical nor mysterious. Success is the natural consequence of consistently applying the basic fundamentals.
– Jim Rohn

Besides the noble art of getting things done, there is the noble art of leaving things undone. The wisdom of life consists in the elimination of non-essentials.
– Lin Yutang

The people that really create the things that change this industry are both the thinker and doer in one person. It's very easy to say "I thought of this three years ago". But usually when you dig a little deeper, you find that the people that really did it were also the people that really worked through the hard intellectual problems as well.
– Steve Jobs

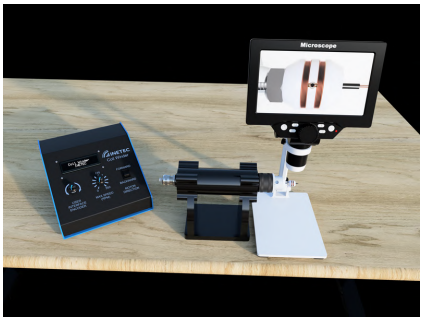
A good practice is to simplify things as much as possible, but that doesn't mean you shouldn't be able to tackle difficult problems.
– Me

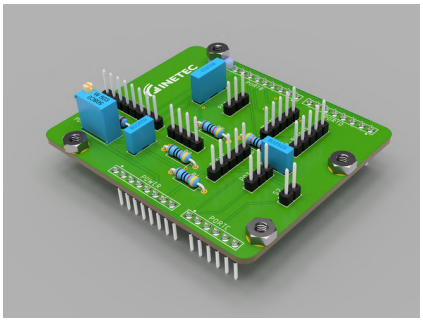
Taking short breaks from work, even before feeling fatigued, is beneficial. A 15-minute break every hour to hour and a half effectively prevents fatigue, allowing the brain to continue processing information even during these brief periods of rest.
– Me

2022 - ...

Undergraduate study of Mechatronics and Robotics
FSB / FAMENA · University of Zagreb, Croatia
I am currently a third-year student in this program. I have distinguished myself as one of the top students, with a grade point average of 4.75 during the first two years of study. I received the Dean's Award, Davorin Bazjanac, for excellence in both the first and second years of my studies. During my first academic year, I was awarded the STEM scholarship, and in the second year, I received the City of Zagreb Scholarship for Excellence. I expect to receive the City of Zagreb scholarship again this year, and while that competition is ongoing, I am currently receiving the STEM scholarship. I am currently employed by the faculty as a teaching assistant for the first-year courses Mathematics 1 and Mathematics 2, a role I also held last year. Throughout my studies at the Faculty of Mechanical Engineering and Naval Architecture (FSB), I have primarily gained a solid theoretical foundation in mechanics, mathematics, materials science, structural elements, thermodynamics, electrical engineering and electronics, as well as welding and assembly. Additionally, I have acquired or deepened knowledge in various practical areas such as Python programming, 3D modeling, technical drawing, and web development. During my studies, I began using LaTeX for writing documents instead of Microsoft Word. I now prefer LaTeX, and this resume has also been written using it.

PROJECTS





Coil Winder
Final Project in Collaboration with INETEC
The development of this coil winder was my high school final project, created in collaboration with INETEC. The coil winder is designed for winding coils used in heads of eddy currents probes. Although not fully automatic, it significantly facilitates the winding process for the operator. The maximum speed of the motor rotating the coil body is adjustable via a potentiometer on the control box. The current speed of the motor is determined by the maximum speed of rotation and the position of the potentiometer foot pedal. The motor is equipped with an encoder that counts the turns wound on the coil. The operator can choose one of several options for counting turns and enter the number of turns the coil should have using pushbutton rotary encoder. During winding, the current number of wound turns and the total number of turns are displayed on the LCD. The operator can choose whether only the number of turns wound out of the total should be displayed or additional information such as the winding layer and the remaining number of turns in the layer should also be displayed.

Mars Vision
Personal Project
Mars Vision is a GUI application for browsing images captured by NASA's rovers Curiosity, Opportunity, and Spirit on Mars. This application was primarily created as a seminar project for the Object-Oriented Programming course but was further developed and improved after submission. NASA's API was used to retrieve data and images. The code was written in Python, and customtkinter was used for GUI development. The user has the ability to find out when each rover captured specific images with which camera according to 20 different criteria. Additionally, the user can search for images by Earth date or Martian sol (sol 1 denotes the landing date on Mars). Image downloading is performed in parallel to speed up the process. The application also remembers settings from the last use. The user can customize various aspects of the application in settings, including visual appearance (e.g., light and dark mode), background music, and options affecting application functionality, such as saving downloaded images to a specific folder on the computer, automatic image downloading for all pages or only the currently displayed ones, selecting pixel sizes of images saved on the computer, using a custom API key, etc.

Note: Only my most significant and major projects are listed here. In addition to these, I have worked on numerous smaller projects that are not as noteworthy.

*This document was written on **December 17, 2024.***