



# JÁNOS BENCE MONORI

BSC STUDENT IN MECHATRONICS  
ENGINEERING

## CONTACT

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### Address

Budapest, Hungary

## EDUCATION

### Bachelor in Mechatronics Engineering

Budapest University of Technology,  
Faculty of Mechanical Engineering  
Mechanical Modelling Specialization  
Budapest, Hungary | 2020-2024

### Katona József High School

Kecskemét, Hungary | 2016-2020  
Advanced studies in Mathematics and  
Physics

## PROFESSIONAL EXPERIENCE

### Student Researcher | Feb. 2023 -

Budapest University of Technology, Department of  
Mechatronics, Optics and Mechanical Informatics (MOGI)

- Kinetically described and modelled a 4 DoF robot mechanism.
- Implemented MATLAB and Simulink models for system identification and experimented with advanced approaches for position and velocity control. (Virtual spring model.)

### Demonstrator | Sep. 2022 -

Budapest University of Technology, Institute of Mathematics

- Teaches Engineering Applications of Multivariable Calculus (Python programming) for 104 enrolled students.
- Analyzed undergraduate students' abstract thinking regarding Mathematics Education. Identified the levels of abstraction in Linear Algebra.
- Assessed Homework Assignments for the courses: Calculus for Engineers, Multivariable Calculus for Engineers.
- Created a Strength of Materials exercise book for the corresponding undergraduate course.

### Project Member | Sep. 2022 - May. 2023

TE Connectivity - AI CUP, Esztergom

- Investigated manufacturing anomalies for injection molding machines with Deep Learning models.
- Decreased the number of errors in sensor data collection.
- Experimented with LSTM and Autoencoder architectures for the anomaly detection, reducing the occurrence rate by 50%.

### Group Project Leader | Sep. 2021 - Jan. 2022

Budapest University of Technology, Department of  
Telecommunications and Media Informatics (TMIT)

- Worked on the project 'Self-driving cars in Duckietown simulated environment'.
- Implemented and hyperparameter optimized a Convolutional Neural Network (CNN) based model in Tensorflow.
- Preprocessed and segmented images using K-Means clustering for better performance.
- Experimented with Reinforcement Learning and Q learning algorithms.

## PROGRAMMING

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- Python, TensorFlow, Keras
- C/C++, Embedded Programming
- MATLAB
- ANSYS, Abaqus
- Inventor
- MS Office tools

## LANGUAGE

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- English - C1 level
- Spanish - C1 level
- Japanese - N4 (~B1) level

## LEADERSHIP EXPERIENCE

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### President | Feb. 2023 -

Mechatronics College for Advanced Studies, Budapest

- Works as the main decision-maker regarding professional and financial competitions, student applications and internal activities.
- Actively inspires undergraduate students to join the Mechatronics College, as we offer support in their projects as well as in their long-term professional aspirations.
- Conducts a Mentoring System for the recently joined members, coordinating them to successfully integrate into our group.
- Organizes Team-building events to further enhance the community's cohesion. Initiated a weekly workshop called 'MSZÓra', where members gather around to build their projects or prepare for consultations and social events.
- Supervises the (Project, Consultation, Community and External Liaising) sub-groups' activities and takes appropriate measures in conflicting scenarios.
- Establishes connections with other Student Groups, Departments and Companies to cooperate in projects, organize workshops and community events.

### Consultation Group Leader | Jan. 2022 - Feb. 2023

Mechatronics College for Advanced Studies, Budapest

- Supervised and organized consultations, courses and lectures for undergraduate students in Mathematics, Mechanics and Programming.
- Implemented a novel communication system to achieve better information flow among our 80 members.
- Represented the College on numerous events such as Open Days and meetings with external companies.

## FIELDS OF INTEREST

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Mathematics

- Linear Algebra and Differential Equations.
- Programming algorithms in Numerical Linear Algebra.
- Markov Decision Process (MDP).

Machine Learning

- Deep Learning solutions for Image Processing and Robotic Control.
- Reinforcement Learning in autonomous driving.

Medical Sciences

- Using Neural Networks in Medical Sciences to predict diseases based on CT scans and Polysomnography tests