# Benedek Forrai

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## Education

- **ETH Zürich** — Zürich, Switzerland
  *Master in Electrical Engineering and IT; GPA: 5.36/6* — *Sep. 2020 –*
- **Budapest University of Technology and Economics** — Budapest, Hungary
  *Bachelor of Engineering in Mechatronics; excellent with highest honors; GPA: 4.51/5* — *Aug. 2016 – Feb. 2020*
- **Practicing Gymnasium of the University of Szeged** — Szeged, Hungary
  *Graduated from a class focused on mathematics; GPA: 4.705/5* — *Sept. 2012 – July. 2016*

## Experience

- **Budapest University of Technology and Economics** — Budapest, Hungary
  *Research and Teaching assistant* — *Aug 2018 - present*
  - **Research on a stochastic time-delay system**: With professor Gábor Stépán, I conduct research on a machine-vision controlled Furuta pendulum, which stabilizes itself using Simultaneous Localization and Mapping (SLAM), while trying to investigate the effects of time delay.
  - **Lectures: A Gentle Introduction To The Frequency Domain**: I gave 4 lectures in front of 160 students to introduce Mechatronics and Electrical Engineering undergraduates to the Laplace Transform and the basics of stability. Videos of the lectures can be found on Youtube.
  - **Development of courses**: Together with my Mathematics professor, Brigitta Szilágyi, I developed and teached three courses. These programs were aimed at first- and second-year engineers, to motivate them in ther Mathematics studies by showing them applications. Our work was presented on the international SEFI conference in 2019; the absctract of our article is available in the book of abstracts.
  - **Junior Tutor in Mathematics**: I teach first year students Calculus and Linear algebra, receiving excellent marks on a tutor grading website (4.9/5).
- **Gremon Systems Zrt.** — Szeged, Hungary
  *Self-Employed Computer Vision Specialist* — *Summer 2017, Summer 2019 - Present*
  - **Developing of a Pest Detection System**: I participated in the developent of a mobile app dedicated to detect, classify and number white flyes - a type of pest - in greenhouse traps.
  - **Plant Temperature Measurement**: As a part of my Bachelor's thesis, I utilized a FLIR Long Wave infrared camera and various segmentation algorithms to accurately measure the temperature of tomato plants; this project is now being prepared for industrial use.
- **Robotizálunk Kft.** — Budapest, Hungary
  *Self-employed Computer Vision Specialist* — *Jan 2019 - Sept. 2020*
  - **Development of Automatic Quality Control Systems**: Teaming up with a former Special College member, I shipped three industrial vision projects for manufacturing firms in Hungary, including Contitech AG.
- **ABB Hungary** — Budapest, Hungary
  *Engineering Trainee* — *Summer 2018*
  - **Developing Plant Simulations**: As an Engineering Trainee, I developed plant simulations and offline-programmed industrial robots for the international engineering firm ABB Ltd. Here I had the opportunity of visiting many factories, realizing the importance of machine vision in modern robotics.

## Projects, Competitons and Other Activities

- **Stipendium Peregrinum Scholarship**: After a selection involving more than 150 participants, I was among the 18 selected students in Hungary who now receive funding to top universities from the Government.
- **Special College of Mechanical Engineering**: As an alumni member of this College, I arrange and hold catch-up courses on Mathematics and Electrical Engineering; newer sessinons are available on my Youtube.
- **Unilever Engineering League**: With a unique quality control method, won a special national award in a team.
- **Danube Cup**: Won a national startup pitch competiton with DualPro, an education-themed startup.
- **Volunteering**: In the summer of 2018 and 2019, volunteered in a summer science camp for children.