

# Elijan J. Mastnak

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Webpage: [ejmastnak.github.io](https://ejmastnak.github.io)

## GENERAL INFORMATION

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**Citizenship:** United States and Slovenia (EU member state)

**Languages:** English, Slovene, Spanish

**Skills include:** clearly-communicated technical writing; teaching introductory through undergraduate physics, mathematics, and programming;  $\text{\LaTeX}$ , including real-time mathematical typesetting; scientific Python (`NumPy`, `Matplotlib`, `SciPy`); vector graphics (`Tikz`; Inkscape); shell scripting and Unix utilities; Vim/NeoVim; Git and GitHub; Java.

## EDUCATION

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**University of Ljubljana, Faculty of Math and Physics**

*Ljubljana, Slovenia*

*Bachelor of Science in Physics*

*October 2018 to September 2021*

Thesis: "End-to-End Classification for Discovery of New Processes in High-Energy Physics"

Thesis webpage: <https://ejmastnak.github.io/seminar/seminar.html>

**Newport Harbor High School**

*Newport Beach, CA*

*International Baccalaureate Diploma*

*September 2014 to June 2017*

## EMPLOYMENT

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**University of Ljubljana, Faculty of Math and Physics**

*Ljubljana, Slovenia*

*Private Contractor*

*June 2021 to present*

Commissioned to typeset and translate the first-year physics curriculum to English using recorded Slovene video lectures, with the aim of making the university's physics program more approachable to foreign-exchange students.

**TMG-BMC Ltd.**

*Ljubljana, Slovenia*

*Data Analyst and Software Developer*

*August 2019 to September 2021*

TMG-BMC is a biomechanics and kinesiology company specializing in high-end, non-invasive sensors for quantifying muscle function in professional athletes. Webpage: <https://www.tmg-bodyevolution.com/>

- Analysis of 1D biomechanical time-series data from TMG, EMG, load cell, and MC sensors: detecting and quantifying twitch potentiation; quantifying contraction time, maximum muscle displacement, and rate of force development.

Techniques include: numerical integration and differentiation, Lagrange interpolation, curve fitting, iterative methods for nonlinear equations, peak detection, filtering, statistical parametric mapping.

- Developed cross-platform user interface (in Java using Swing) to make above-described analysis accessible to non-technical users.
- Regularly worked with professional (including Olympic) athletes, mostly in track and field.

**Newport Harbor High School**

*Newport Beach, CA*

Two positions: *Academic Tutor* and *Soccer Coach*

*August 2017 to June 2018*

- Tutor in physics, math and programming for Newport Harbor High School's AVID program, which provides school-sponsored after-school tutoring to students.
- Assistant coach in the boy's soccer program for the academic year (as an alumnus and former varsity captain); head coach of the Frosh-Soph team in the 2017-18 winter season.

**Self-Employed**

*Newport Beach, CA*

*Private Tutor*

*September 2017 to June 2018*

Worked as a private tutor in math and physics in the Newport Beach and Costa Mesa area; served students from Newport Harbor and Corona del Mar High School.