Elijan J. Mastnak

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This is a public version in which address, DOB, etc. are intentionally omitted.

General Information

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; LaTeX, including real-time transcription of handwritten mathematical formulae; scientific Python (`NumPy`, `Matplotlib`, `SciPy`); vector graphics (`Tikz`; Inkscape); shell scripting and Unix utilities; Java; Git and GitHub; Vim/Neovim.

Education

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

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, in textbook form, using recorded Slovene video lectures. Project goal: make 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.