

Elijan J. Mastnak

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GENERAL INFORMATION

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

Fluent languages: English, Slovene, Spanish

Skills include: clearly-communicated, human-friendly technical writing; teaching introductory through undergraduate physics, mathematics, signal processing, and computer programming; data analysis with the scientific Python stack (NumPy, Matplotlib, SciPy); typesetting with LaTeX; Linux system administration; website and web application design, maintenance, and hosting.

PORTFOLIO

Real-time LaTeX Using (Neo)Vim

Tutorial series/technical writing

A 7-article guide to supercharged mathematical typesetting [officially endorsed](#) by the VimTeX project.

See it here: www.ejmastnak.com/tutorials/vim-latex/intro/

A real analysis textbook

Mathematics textbook

A textbook in introductory real analysis based on lecture notes from university.

See it here: www.ejmastnak.com/mat1.pdf

Solved exercises and lecture notes

Comprehensive lecture notes

1500+ pages of solved exercises and lecture notes in undergraduate physics, typeset in LaTeX.

See it here: www.ejmastnak.com/notes/fmf/fmf/

Arch Linux Post-Installation Tutorials

Technical writing

Bite-sized, actionable tutorials for a functional work environment after a minimal install of Arch Linux.

See it here: www.ejmastnak.com/tutorials/arch/about/

EDUCATION

University of Ljubljana, Faculty of Math and Physics

Ljubljana, Slovenia

Bachelor of Science in Physics

October 2018 to September 2021

Undergraduate thesis: "End-to-End Particle Classification in High-Energy Physics"

Thesis webpage: www.ejmastnak.com/projects/seminar/

Newport Harbor High School

Newport Beach, CA

International Baccalaureate Diploma

September 2014 to June 2017

EMPLOYMENT

TMG-BMC Ltd.

Ljubljana, Slovenia

Programmatic Analysis of Time-Series Biomechanics Data

August 2019 to present

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 hypothesis testing, statistical parametric mapping.

- Developed cross-platform web applications and graphical user interfaces to make above-described analysis accessible to non-technical users.
- Trained to use TMG, EMG, load cell, and MC sensors.
- Regularly worked with professional (including Olympic) athletes, mostly in track and field.

EMPLOYMENT (CONTINUED)

University of Ljubljana, Faculty of Math and Physics

Student teacher

Ljubljana, Slovenia

January 2023 to June 2023

Hired as a student teaching assistant for the first-year physics course Computational Tools in Physics, which covers Linux, LaTeX, the scientific Python stack, introductory scientific computing. Official information and example material (in Slovene) is [available on my website](#).

University of Ljubljana, Faculty of Math and Physics

Textbook Author

Ljubljana, Slovenia

June 2021 to December 2021

Commissioned to transform the Faculty's introductory mechanics course into English-language textbook form (to make the university's physics program more approachable to foreign-exchange students). The project was later abandoned due to lack of funding, but you can see [60-page sample here](#).

Newport Harbor High School

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

Newport Beach, CA

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

Private Tutor in Math and Physics

Newport Beach, CA

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.