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); typsetting with LaTeX; Linux system adminstration; 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   *Ljubljana, Slovenia*
Student teacher   *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   *Ljubljana, Slovenia*
Textbook Author   *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 abandonded due to lack of funding, but you can see 60-page sample here.

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 in Math and Physics   *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.