GESZTI GYULA PETER

Physicist / Developer

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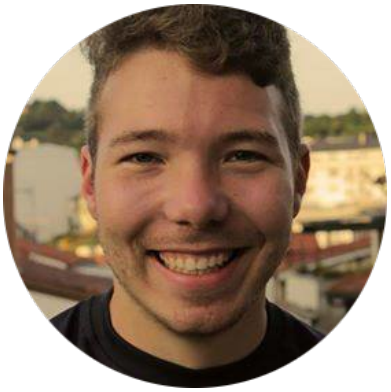
https://github.com/JPGeszti



Personal Statement

Passionate about the intersection of physics and healthcare, I am a physicist with a strong background in medical physics. My undergraduate project focused on inverse optimization algorithms in radiotherapy treatment planning, giving me practical insights into the application of physics in healthcare. In my postgraduate project, I optimized ASL-MRI sequences and created an efficient image processing pipeline for clinicians.

I also have **experience in software development** using `Java` and `Python`, combining my physics knowledge with programming skills to create efficient solutions. Additionally, **my recent postgraduate studies have enhanced my proficiency in machine learning methods and artificial intelligence applications**, expanding my programming repertoire and analytic capabilities.

Work Experience

2023 April – 2020 July

MRI Physicist

Mediso Ltd. — 2 years & 9 months

As an MRI physicist, I played a key role in the **research and development of the MRI modality**, collaborating with a team of engineers and physicists. Specifically, I contributed to the software development of the nanoScan MRI and PET/MRI lineup. My responsibilities encompassed sequence development based on user requirements, optimizing protocols, and conducting sequence testing on the hardware. Additionally, I participated in projects involving the development and implementation of post-processing pipelines within the software. Throughout these endeavours, I utilized and improved my coding skills in `Java` and `MATLAB`, which further ignited my interest in software development.

Education

2023 September – 2022 September

Mathematics Expert in Data Analytics and Machine Learning
ELTE — Eötvös Loránd Research University
Postgraduate Specialization Program

The focus of the training is machine learning, its techniques and solutions from the fields of statistics and deep learning, as well as data science and big data. My thesis will be written on Natural Language Processing Models.

2019 October – 2018 September

Medical Engineering & Physics MSc
KCL — King's College London

The course I pursued was accredited by IPEM, the Institute of Physics and Engineering in Medicine. Within this program, I specialized in the Medical Physics stream, furthering my journey towards becoming a skilled medical physicist.

For my thesis project, I focused on the application of ASL-MRI in the early detection of dementia. This research was carried out in collaboration with the Neuroradiology Department at King's College Hospital. Throughout this project, I developed a dedicated software pipeline using `MATLAB` for image processing and visualization. Additionally, I utilized python tools to enhance the interactive data visualization aspects.

2018 September – 2015 September

Physics BSc
ELTE — Eötvös Loránd Research University

During my course of study, I dedicated my focus to theoretical physics and research. As I progressed into the third semester, I expanded my knowledge by enrolling in specialized courses in bioengineering and biophysics. Additionally, I pursued courses in computer science, with a particular emphasis on utilizing the `C` and `C++` programming languages for computational physics applications.

My thesis project centered around brachytherapy treatment planning and optimization, conducted in collaboration with the Radiotherapy Department at the Hungarian National Institute of Oncology. This immersive project allowed me to apply my theoretical knowledge in a practical setting, providing a deeper understanding of the field while solidifying my passion for medical physics.

2015 September – 2013 September

International Baccalaureate Diploma Programme
Tóth Árpád Secondary School

I took `Chemistry`, `Biology` and `English Literature` as higher level subjects; and `History`, `Mathematics` and `Hungarian Literature` as standard level subjects.

Academic Experience

Postgraduate Project

Neuroradiology Department of King's College Hospital
March 2019 — September 2019

The main aim of the project was the development of an optimized and quantitative ASL-MRI data acquisition and analyses protocol for dementia patients in the Neuroradiology Department of King's College Hospital. In order to achieve this, I developed a `MATLAB` based code, implementing common tools used in the processing and analyses of images acquired with the use of ASL-MRI on test subjects. Further tools for image segmentation were also explored and applied based on pre-existing atlases. For effective data visualization, an additional python application was implemented. The project was carried out in the Neuroradiology Department of King's College Hospital.

Academic Supervisor: Enrico De Vita
Clinical Supervisor: Marco Borri

Undergraduate Project

Hungarian National Institute of Oncology
November 2017 — June 2018

In this project conducted at the Hungarian National Institute of Oncology, my main focus was to compare and retrospectively analyze two optimization algorithms used in high dose rate brachytherapy treatment. The project involved working with a well-established dataset of optimized patient data and utilizing the new algorithm to optimize this dataset further. To compare the performance of the algorithms, I conducted a comprehensive statistical evaluation using StatSoft's STATISTICA 12 software. This immersive project provided a unique opportunity to delve into the intricacies of radiation therapy optimization and its impact on patient outcomes.

Supervisor: Georgina Fröhlich

Skills & Expertise

Spoken Languages	**Hungarian** (Native Proficiency) **English** (Full Professional Proficiency) **Spanish** (Elemenetary Proficiency)
Programming Languages	Java (Seniority: Middle) — Python (NumPy, Pandas) MATLAB — C — C++ — R — SQL
Software Experience	**Tools for Programming** Git — GitHub — Jupyter Notebook — VS Code **Statistical Analytic Tools** SPSS — STATISTICA 12 — Microsoft Excel **Project Management Tools** Jira — Confluence — Notion **Adobe Creative Tools** Photoshop — Dreamweaver — Premiere Pro

References

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