GESZTI GYULA PETER

Medical Physicist

Contact Details

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Personal Statement

I am a physicist with a background in theoretical physics and a passion for the field of medical physics. During my undergraduate studies, I had the opportunity to work on a fascinating project focused on inverse optimization algorithms used in radiotherapy treatment planning. This experience allowed me to gain practical insights into the application of physics in healthcare and further sparked my interest in the field. For my postgraduate project, I worked on ASL-MRI sequence optimization and automated image processing.

In my previous job placement, I had the opportunity to engage in software development tasks that required expertise in the Java programming language. I thoroughly enjoyed this aspect of my work, as it allowed me to combine my physics knowledge with programming skills to create efficient and effective solutions. Furthermore, my recent postgraduate studies have equipped me with a strong foundation in Python development, expanding my repertoire of programming languages.

Work Experience

2023 April – 2020 July

MRI Physicist

Mediso Ltd. — 2 years & 9 months

In my role as an MRI physicist, I did R&D for the MRI modality with a team of engineers and physicists. I aided the software development of the nanoScan MRI and PET/MRI lineup. My responsibilities included sequence development based on user requirements. I also provided protocols with the developed imaging sequences for the users, and gathered experience with protocol optimization and sequence testing on the hardware. I also worked on projects where post-processing pipelines were developed and implemented in the software. My main coding languages were `Java` and `MATLAB` for the given projects.

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 is accredited by IPEM. I completed the courses of the **Medical Physics** stream to become a medical physicist. **My thesis project** was on the application of ASL-MRI in the early detection of dementia, conducted in the Neuroradiology Department of King's College Hospital. This project involved the creation of a dedicated `MATLAB` based software for image processing and visualization as well as the utilization of python tools for further interactive data visualization.

2018 September – 2015 September

Physics BSc
ELTE — Eötvös Loránd Research University

The focus of the course had more emphasis on theoretical physics and research. From the third semester, I also took specialized courses in bioengineering and biophysics. I also had courses in computer science, focusing mainly on `C` and `C++` programming languages and their applications in computational physics. **My thesis project** was on brachytherapy treatment planning and optimization, conducted in the Radiotherapy Department of the Hungarian National Institute of Oncology.

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

The main aim of the project was the comparison and retrospective analyses of two optimization algorithms on patients who had undergone high dose rate brachytherapy treatment. The project involved the establishment of a set of previously optimized patient data, and the optimization of these with the new algorithm. This set of patient data was then statistically evaluated to compare the two algorithms. For this evaluation, StatSoft's STATISTICA 12 software was used. The project was carried out in the Hungarian National Institute of Oncology.

Supervisor: Georgina Fröhlich

Skills & Expertise

Spoken Languages	**Hungarian** (Native Proficiency) **English** (Full Professional Proficiency) **Spanish** (Elemenetary Proficiency)
Programming Languages	Java — C — C++ — MATLAB — Python — R
Software Experience	**Microsoft Office Tools** Word — Excel — Powerpoint **Adobe Tools** Photoshop — Dreamweaver — Premiere Pro **Statistical Analytic Tools** SPSS — STATISTICA 12 **Tools for Programming** Jupyter Notebook — Git — GitHub

References

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