

## Cover letter

From January 2017 I am working as a lead software developer at Optimal Optik Optics, Electronics and Precision Mechanics Design and Development Ltd. I joined to a research and development project supported by the EU, which aims to create an intelligent optical plate metal part recognition equipment for industrial quality assurance. In connection with the software development tasks of this plate metal tester, I made an ethernet communication based multi-camera control module, as well as I established and implemented a parallelized image preprocessing algorithm by using adaptive thresholding technique and I developed a steel plate thickness measurement method that applies laser line generator. Besides this, I have made the control and data processing software of a bidirectional scattering distribution function measurement instrument for qualification of diffuser materials.

Before this for two years and eight months I worked as a senior software developer at the GPS Tuner Ltd., which is a mobile navigation application development company. Here I dealt with the construction of a learning algorithm in order to modeling the range performance of electric bicycles as well as for the suggestion of optimal gear selection strategy. In addition I participated in the development of a multiplatform online desktop updater tool and its automated testing environment which synchronizes routes, maps and softwares between cloud providers and bicycle navigation devices. I have designed and constructed a relational database for storing the logged GPS track and e-bike sensor data. Furthermore, I have created a reporting website and a statistical analysis module in order to provide a structured big-data mining system to the manufacturers.

Formerly for nine months as a software developer I took part in the work of the Intellisense Co. Ltd (WebCam Laboratory) startup company, which provides education-related image processing and data acquisition solutions. As a member of the development team, I made the design and coding of an intelligent mathematical education software that is based on image processing and analysis techniques.

Before this for four years and five months I have performed application-oriented research and development in the field of laser- and spectroscopic ellipsometry as a co-worker of the Software Development Team at the Semilab Semiconductor Laboratory Co. Ltd that carried out measurement equipment development, production and sales for the semiconductor and photovoltaic industry. The ellipsometric measurement technique allows to determine the structural, material and optical characteristic of thin films through model calculations, which apply strongly non-linear optimizer algorithms. My software development works were partly the realization of these analysis modules in multi layered and multi threaded applications for inline, industrial testing. On the other hand, I have made offline applications with interactive graphical user interfaces for R&D purposes.

Previously for four and half years, I had been member of the Test Engineer Team of the Engineering Service

Center as test software development engineer at the Elcoteq multinational-industrial electronics manufacturer company in Pécs. During my work, I designed and developed applications, databases and dynamic web interfaces for statistical process control, measurement system analysis, quality control as well as product line optimization in order to support the mass production. Furthermore, I made test automation and test data analysis programs which were required instrument and measurement control and computer data acquisition.

Earlier for five years, I worked as an associate research fellow at the Institute of Nuclear Research (ATOMKI) of the Hungarian Academy of Sciences (MTA) in Debrecen, where I dealt with accelerator based atomic physics. During this time I had opportunity to join the research work of the Surface and Material Science Laboratory at the Nara Institute of Science and Technology (NAIST) in Japan as guest researcher for a half year period.

In these research institutes beside the experimental work my programming tasks were to perform different computer-aided theoretical physics model calculations, that needed the development of numerical mathematical algorithms.

I got programmer informaticist postgraduate diploma with excellent rating at Faculty of Engineering and Computer Science at the John von Neumann University in Kecskemét. I have completed my physicist master's degree with summa cum laude qualification at the Graduate School in Physics at Faculty of Natural Sciences and Informatics at the University of Szeged in Szeged. During my secondary school study I was a student at Faculty of Industrial Electronics at the Károly Zipernowsky Technical High School in Pécs, where I got maturity certificate with gold medal.

I have experiences in model-based data analysis techniques as well as development of test automation softwares and data intensive applications which are built on high level programming languages. My softwares have efficiently been applied in both technical and scientific practice.