



# Alex Povod

## Contact

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## Additional Skills

### Programming Languages:

- Python
- C/C++
- C#
- JavaScript
- TypeScript

### UI/UX Development:

- Qt
- ImGUI

### Scientific Software:

- GEANT4
- EGSnrc
- OpenMC

### Web Development:

- ASP.NET
- Entity Framework
- HTML/CSS
- Angular
- Node.js

### Database Management:

- Microsoft SQL
- SQLite

## Professional Summary

An experienced engineer and researcher in the field of production of radiation equipment and radiation monitoring. I know Python, Js/Ts, C/C++ and C# to create reliable and effective solutions. I specialize in radiation transfer modeling using GEANT4, EGSnrc and OpenMC to optimize equipment design. I develop and implement machine learning algorithms to improve radiation monitoring and measurement systems. I use Python and the corresponding machine learning libraries to create predictive models for analyzing radiation data.

## Work Experience

01.09.2021 - until now

### Dosimetry Department Engineer, SPE ATOMTEX, Minsk

- Tools and algorithms the Python implementation of spectral unmixing algorithms to unmix a measured gamma-ray spectrum: Algorithm for determining radiation activity based on Tikhonov regularization. Sparse spectral unmixing based on Poisson-based Greedy algorithm and Chambolle-Pock algorithm.
- Radionuclide identification algorithms using machine learning, subtractive clustering and fuzzy logic methods. Appropriate machine learning libraries have been applied to develop and fine-tune models that can accurately classify radionuclides based on radiation measurement data. Integrated subtractive clustering to improve data partitioning and reduce dimensionality to improve model performance.
- Developed an application based on Bonner spheres to deploy data that allows you to create radiation spectra and other important information. The C/C++ programming language and qt tools were used to develop a user-friendly application interface, which made it accessible to radiation specialists and researchers.
- I use the modeling tools GEANT4, EGSnrc and OpenMC to simulate the interactions and behavior of radiation in various radiation detection systems. Developed and performed simulations to study the response of radiation detectors, assess their accuracy and performance in various radiation environments, including for SiPM. Individual simulation scenarios have been developed to simulate real situations of radiation exposure, allowing to evaluate and optimize the design of radiation detectors.
- Developed and implemented of a Radionuclide Accounting Control System for ATOMTEX, utilizing the ASP.NET 7 MVC framework. Designed and built a user-friendly web application for real-time tracking and management of radionuclide materials, enhancing the enterprise's radiation safety protocols and regulatory compliance.

## Education

01.09.2016 - 21.06.2021

### Medical physicist, Bachelor, ISEI BSU, Minsk

- Radiation physics: fundamentals of ionizing and non-ionizing radiation, as well as their interaction with biological tissues.
- Medical imaging: Various medical imaging techniques such as X-ray, computed tomography, MRI, ultrasound and nuclear medicine.
- Radiation therapy: principles and practice of using radiation for the treatment of cancer and other diseases. This includes the use of a linear accelerator, brachytherapy and treatment planning.
- Dosimetry: measurement and calculation of the radiation dose that ensures

the safe and effective use of radiation in medical treatment.

- Radiation safety: radiation protection, safety measures and regulatory recommendations to minimize the risks associated with ionizing radiation

## Languages

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Belarusian	— Native speaker
English	— B1
Ukrainian	— Highly proficient in speaking and writing
Russian	— Native speaker