Gaidukasov Rafael

Junior Data Scientist / Junior ML-Engineer

Phone: +7 (915) 338-04-10

Email: gaydukasov.r@gmail.com

Portfolio: https://github.com/raphael12

Summary

Data scientist / ML engineer / Scientist. Currently working on a thesis in the field of machine learning application in physics problems. I want to apply my knowledge to solve problems in production or research. I'm graduated the professional training course Data Science bootcamp from Yandex EdTech. The final project was the work on optimizing the production costs of the metallurgical combine of LLC "So we temper steel". It was necessary to build a model that would predict the temperature of the steel after processing. I also completed the course "Introduction to Machine Learning" from the HSE and the School of Data Analysis on the Coursera platform. At the end of the course, it was necessary to build a model to predict the winner of a Dota 2 match by the first 5 minutes of the game.

Education (Master's degree)

2021-2025	Moscow Institute of Physics and Technology (MIPT State University). Phystech School of Electronics, Photonics and Molecular Physics, Physics and Astronomy, PhD degree
2019-2021	Moscow Institute of Physics and Technology (MIPT State University). Phystech School of Electronics, Photonics and Molecular Physics, Applied Mathematics and Physics, Master's degree
2015-2019	Moscow Institute of Physics and Technology (MIPT State University). Department of Photonics and Molecular Physics, Applied Mathematics and Physics, Bachelor's degree

Relevant courses

11.2022-04.2023	Practicum by Yandex (INO CPE "Yandex EdTech") Data Science bootcamp Professional Training Course.
03.2022	Coursera, HSE University and Yandex School of Data analysis, Introduction to Machine Learnin

Skills

Data Scientist: Python, Pandas, Numpy, Scikit-Learn, CatBoost, TensorFlow, Keras, PostgreSQL, Statistics, Seaborn, Mathematical analysis

Languages: Russian (Native), English (B2)

Employment History

Valiev Institute of Physics and Technology of Russian Academy of Sciences. (https://ftian.ru/en/)

12.2022-Present

Laboratory of Functional Dielectrics for Microelectronics
Junior scientist.
Tools: Python, Git, Pandas, NumPy, TensorFlow, Keras, Scikit-Learn, SciPy, PyQt5
Responsibilities:
- Applications of ML for solving spectral ellipsometry problems
- Work on a thesis for the PhD degree in physical and mathematical sciences
- Spectral Ellipsometry Installation Operator

Achievements:
- Proposed using machine learning in the field of physics (to solve problems of spectral ellipsometry). This simplified the work with micro- and nanoelectronics materials and automated the process of their analysis. According to the developed method, an article is being prepared for publication.
- Modified the spectral reflectometry method for cryogenic plasma chemical etching installations. I wrote a special software for calculating the parameters of samples in situ, in which I applied the BFGS and ML method.

09.2022-12.2022

Laboratory of microstructuring and submicron devices.
Junior scientist.
Tools: Python, Git, Pandas, NumPy, SciPy, Arduino, MATLAB
Responsibilities:
- Developed methods and devices for *in situ / ex situ* diagnostics of materials for micro- and nanoelectronics
- Spoke at National and International conferences
- Performed projects on grants

Achievements:
- Applications of Tikhonov regularization for the problem of ellipsometric porometry. An article has been written based on the results obtained (doi: 10.1134/S1063739722040060)

02.2020-08.2021

Laboratory of microstructuring and submicron devices.
Engineer.
Tools: MATLAB, Arduino, C++
Responsibilities:
- Developed methods and devices for in situ/ex situ diagnostics of materials used in micro/nanoelectronics.

Achievements:
- Applied the laser interferometer method for cryogenic plasma chemical etching chambers, which made it easier to work with samples in plasma. He reported on the work done at three conferences.
- I assembled an installation for porometry and wrote software for it in the C++ programming language.

Conferences: Talks & Posters

1. Investigation of adsorption in porous low-k dielectrics using the spectral reflectometry. <u>Gaidukasov R.A.,</u> Miakonkikh A.V. Advanced Materials and Technologies (AMT – 2023), international conference, 10 – 15 Apr 2023. Presentation.

2. «Investigation of gas adsorption in porous dielectrics using spectral reflectometry at low temperatures» Gaidukasov R.A., Miakonkikh A.V. 65th MIPT all-Russian Scientific Conference, 3 – 8 Apr 2023. Presentation.
3. «Investigation of adsorption in films of nanoporous low-k dielectrics using ellipsometric porometry» Gaidukasov R.A. 7th All-Russian Youth Scientific forum; « The Science of the future is the Science of the young », 23 – 26 Aug 2022; Presentation.
4. Investigation of porous low-k dielectrics using spectral ellipsometry. Gaidukasov R.A., Miakonkikh A.V. Advanced Materials and Technologies (AMT – 2022), international conference, 11 – 15 Apr 2022. Presentation.
5. «Investigation of nanoporous dielectrics using ellipsometric porometry» Gaidukasov R.A., Miakonkikh A.V. 64th MIPT all-Russian Scientific Conference, 29 Nov – 03 Dec 2021. Presentation.
6. Investigation of nanoporous low-k dielectrics by spectral ellipsometry. Gaidukasov R.A., Miakonkikh A.V. The 14th International Conference Micro- and Nanoelectronics – 2021 (ICMNE-2021), 4 – 8 Oct 2021. Poster.
7. «Application of interferometry and ellipsometry for precision measurements of layer thicknesses in plasma deposition and etching processes» Gaidukasov R.A., Miakonkikh A.V., Klemente I., Rudenko, K.V. 1st International Conference Gas-discharge plasma and synthesis of nanostructures (GDP-NANO 2020), 2 – 5 Dec 2020. Presentation.
8. «Application of Tikhonov regularization method to solving ellipsometric porometry problems» Gaidukasov R.A., Miakonkikh A.V., Rudenko, K.V. 63rd MIPT all-Russian Scientific Conference, 23 – 29 Nov 2020. Presentation.
9. «Investigation of gas adsorption in porous dielectrics using a laser interferometer at low temperatures» Gaidukasov R.A., Miakonkikh A.V. 62nd MIPT all-Russian Scientific Conference,18 – 23 Nov 2019. Presentation.
10. Application of laser reflectomery for study of adsorption of gases on porous low-k dielectrics during cryo-etching. Gaidukasov R.A., Miakonkikh A.V. International Conference on Modern Problems in the Physics of Surfaces and Nanostructures Yaroslavl, 26 – 29 Aug 2019. Poster.

Journal Papers

1. Application of the Tikhonov Regularization Method in Problems of Ellipsometic Porometry of Low-K Dielectrics. Gaidukasov, R.A., Miakonkikh, A.V., Rudenko, K.V. // (2022) Russian Microelectronics, 51 (4), pp.199-209. DOI: 10.1134/S1063739722040060 Received January 6, 2022;