Nikola Kalábová

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Education

Charles University (Prague, Czech Republic) BSc. in Bioinformatics 2018 – now

Friedrich Schiller Gymnasium (Pirna, Germany) Abitur 2012 – 2018

Work Experience

Teaching Assistant for Introduction to Linux 2021 – now

Department of Distributed and Dependable Systems, Faculty of Mathematics and Physics, Charles University

Research internship 2020 – now

Institute of Biotechnology, Czech Academy of Sciences

Projects

Neural networks QSPR model (GitHub) 2021 – now

Prediction of physico-chemical properties for a variety of molecules using graph-informed feature extraction and (1) a neural networks for significant performance or (2) a simple linear regression model for explainability.

Calculation of dihedral angles in DNA molecules Institute of Biotechnology 2020 – now

Information extraction from CIF files. Dihedral angles calculation for further classification of DNAs.

KD-tree for periodical data (GitHub) Institute of Biotechnology 2020

A tool for fast search for nearest neighbours in a large data set of periodical data with the usage of KD-trees.

Calculation of the area of planar shapes by the Monte Carlo method

Faculty of Nuclear Sciences and Physical Engineering 2016

First encounter with real research, output of which was a scientific paper and a presentation.

Skills

Programming: C#, Python, R, Linux, Networkx, Git

Software: PyMol, Latex, Adobe Photoshop

Mathematics: Graph Theory, Algebra, Linear Algebra, Mathematical Structures

Languages

Czech: C2 level (native) **German**: C1 level (A-levels from German as native language)

English: C1 level (TOEFL score 101) **Russian**: A1 level

Extracurricular activities

Organizer of mathematics competition for middle schools Pikomat 2018 - now

Main organizer for two years.

Science week on Faculty of Nuclear Sciences and Physical Engineering 2016

Interests

Chemical graph theory, Complex Networks, Mathematical strucutres, Artificial intelligence