Konrad Gorzelańczyk

E-mail: konrad.jan.gorzelanczyk@gmail.com
Phone: +48 515 333 887
Date of birth: March 3, 2003
Personal website: kgorze.github.io
LinkedIn: linkedin.com/in/konrad-gorzelańczyk

Professional Summary

I am a second-year Bioinformatics student with experience in conducting scientific projects and actively participating in student research activities. Currently, I'm establishing a student research club section dedicated to **Computer-Aided Drug Design**, effectively combining chemistry and computer science to develop innovative solutions. Additionally, I contribute to the Student Council, where I am responsible for enhancing the quality of education. My main scientific interest lies in molecular dynamics, and I am continuously deepening my knowledge in this field. Driven by this passion, I joined the research group **"Searching for the Origins of Life"** led by Professor Błażewicz, where I am involved in molecular dynamics research.
I am ambitious, goal-oriented, and committed to achieving set objectives. I enthusiastically embrace new challenges and seek practical applications for my knowledge to create a tangible impact on my environment.

Professional Experience

Infobemar, Gniezno
(February 2022 – March 2022, Internship)

- Internship at a small, two-person company.
- Independently developed a software application utilizing metaheuristics – specifically, an elevator management system implemented in C++.

Bridgestone Poznań sp. z o.o.
(July 2021 – August 2021 and August 2023 – January 2024)

- Assistant Operator of Tire Production Machinery
- Operated machinery, conducted quality control checks, and ensured continuity of the production process.

Education

Bachelor of Engineering: Bioinformatics, Poznan University of Technology 2023–2027 (currently 4th semester)

- Active member of the **Bioinformatics Scientific Circle** (**KNBi**).
  - Co-founder of the **Computer-Aided Drug Design** (CADD) section.
- **Participated in research** with Poznan University of Technology staff on applying ML/MM methods and metadynamics models in molecular dynamics studies.

IT Technician, Zespół Szkół Ekonomicznych in Gniezno 2019–2023 (Graduated with honors)

- Professional diploma: IT Technician
- Secondary school certificate (Matura)

Technical Skills & Practical Experience

- **Molecular Dynamics Simulations (MD) -** Practical experience in preparing, running, and analyzing simulations using **GROMACS** (TIP4P, NVT/NPT ensembles, RDF, MSD, diffusion analyses).
- **Software Proficiency -** Experienced with: **GROMACS**, **PackMol**, **VMD** Basic familiarity with: **NAMD**, **LAMMPS**, **AMBER**, **PyMol**. Quick adaptability to new simulation tools and software packages.
- **Simulation Management & HPC Environments -** Basic proficiency working in **Linux** and HPC systems (including GPU-accelerated clusters). Experience with resources provided by the **Poznan Supercomputing and Networking Center (PCSS)**.
- **Data Analysis & Scientific Computation -** Calculating diffusion coefficients, analyzing structural properties (RDF), and interpreting simulation results in the context of scientific literature. Advanced skills in trajectory analysis, free-energy calculations, and statistical interpretation of results.
- **Molecular Modeling -** Preparing molecular systems for simulation (PackMol, editing .top and .gro files) and optimizing simulation parameters.
- **Problem-solving & Result Interpretation -** Identifying and resolving common issues in MD simulations. Interpreting simulation results within the context of research questions and experimental data.
- **Literature Knowledge & MD Standards -** Adhering to best practices as outlined in **GROMACS documentation** and current scientific literature.
- **Active Involvement in Polaris Hub Projects -** Developing custom predictive models for **ADMET** properties (currently without AI/ML implementation).
- **C++ Programming (3 years) -** Solid experience in C++ programming, including large projects available on GitHub. Knowledge of modern C++ standards (C++11/14/17); extensive coursework projects. Object-oriented programming and design pattern proficiency, including UML diagramming and software engineering principles. Familiarity with development tools: **CMake**, **GCC**, **Clang**. Practical experience with version control systems, mainly **Git**. Basic familiarity with CI/CD practices and build automation tools. Fundamental knowledge of data structures and commonly used algorithms.
- **Python Programming (Molecular Simulation Data Analysis)** - Advanced scripting skills tailored for MD data analysis. Proficient in **NumPy**, **SciPy**, **pandas** for effective processing of large MD datasets. Experience creating comprehensive, modular analysis scripts using **MDAnalysis** and custom object-oriented methods. Implementing clustering algorithms for molecular structures, identifying structural patterns in aqueous systems, and visualizing energy landscapes. Proficiency with visualization libraries, primarily **Matplotlib** (RDF, MSD, potential energy maps). Integrating Python scripts with MD software (e.g., GROMACS), automating analysis workflows through task management pipelines. Basic knowledge of Python script optimization and profiling, particularly applied to TIP4P and TIP4P/Ice water models.
- **R Programming** - Skills in biological data analysis, including gene expression analysis (**Bioconductor** packages: limma, GEOquery). Experience in data normalization, differential expression analysis (linear models), and visualization (heatmaps, volcano plots, Venn diagrams). Practical knowledge of building machine learning models, specifically **3D-QSAR CoMFA**, based on scientific literature.
- **LLM Technologies -** Comprehensive familiarity with productivity-enhancing tools, including **ChatGPT Deep Research**, **Cursor**, **Perplexity DeepResearch**, and **SciSpace**.
- **Creating pipelines in Nextflow** - Designing and implementing scalable bioinformatics pipelines using **Nextflow DSL2**. Experienced in developing modular, reproducible workflows for RNA-Seq analysis, from quality control to differential expression analysis. Familiar with genomic data processing, including **FASTQ**, **BAM**, **GTF/GFF** file formats, and associated bioinformatics tools for data handling and analysis.

Additional Information

Languages

- English – B2 (communicative), currently enrolled in a C1 English proficiency course.
- Polish – C2 (native)

Awards and Honors

- **Valedictorian,** Zespół Szkół Ekonomicznych im. Stefana Kardynała Wyszyńskiego Prymasa Tysiąclecia in Gniezno (2021, 2022, 2023)
- Scholarship awarded by the **Minister of Education and Science** (2021, 2022, 2023)

Extracurricular Activities & Volunteering

- **Poznan University of Technology Student Council (SSPP)**
- (2023–2025)
  - Volunteer at academic and community events (TEDxPUT 2024, WOŚP PUT 2024, 2025).

Projects

- **"Czas zawodowców BIS – zawodowa Wielkopolska"** (October 2022)
  - Introduction to student life at Poznan University of Technology and career development opportunities offered by the university.

Courses and Trainings

- **Training: "XII Student Quality Forum – Poznan"** (December 2023)
  - Introduction to the higher education system in Poland and exploration of possibilities to enhance its student-friendliness.