

# Aleksander Sergiej

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## EXPERIENCE

### Students' AI Scientific Association "Golem"

March 2026 – Present

Member

Warsaw, PL

- Recruitment project: benchmarking multilayer perceptrons (MLP), decision trees, and hybrid models.
- Current project: researching fine-tuning methods for LLMs to detect source code vulnerabilities. Model trained on the Athena supercomputer by plgrid.pl.

### PCS - Tankomaty.pl

June 2025 – August 2025

Intern / C# Developer

Warsaw, PL

- Developed a configuration system for field service technicians.
- Implemented low-level drivers and wrappers within the .NET environment.
- Technologies and tools used: C#, ASP.NET Core, SQL, TCP/IP, Git, Postman.

## Selected Projects

### Minirenderer | C++, CUDA, Graphics Programming, CPU & GPU Rendering

- Developed a from-scratch 3D software rasterizer in C++ to master computer graphics and low-level rendering techniques.
- Implemented geometric transformations, Phong shading, and optimized rasterization algorithms.
- Currently extending the renderer with a CUDA-accelerated engine to handle parallel raycasting and lighting computations on the GPU.

### Reactor-HTTPD | C, Linux, Epoll, Networking

- Created a minimalist, high-performance HTTP server in C using the reactor architectural pattern.
- Utilized Linux **epoll** for I/O multiplexing and efficient concurrent connection handling.

### Arena Allocator | C, OS, Virtual Memory

- A bulk (arena) linear allocator written in C, built on top of OS virtual memory instead of malloc.
- Interfaced directly with operating system virtual memory primitives to manage page allocations securely and efficiently.

### Contiguous Memory Allocator | C, OS, Memory Management

- Implemented a contiguous memory allocation model.
- Developed fragmentation handling via memory compaction, allocation strategies (First/Best/Worst-fit)

## Education

### Warsaw University of Technology

Sep. 2024 – Sep. 2028

B.Eng. in Computer Science & B.Sc. in Mathematics

Warsaw, Poland

- **Faculty:** Faculty of Mathematics and Information Science
- **Relevant Coursework:** Algorithms and Data Structures, Operating Systems, CUDA
- **Academic Interests:** High-Performance Computing, OS Development, Graph Theory, Algorithms

## Skills

**Languages:** Polish (Native), English (C1 – Cambridge), German (B2 – Goethe Zertifikat), Chinese (A2 – HSK 2)

**Programming Languages:** C, C++, C#, CUDA, Python, SQL, Bash

**Libraries & Frameworks:** .NET (ASP.NET Core, EF Core), PyTorch, Scikit-learn, Unity

**Tools & Concepts:** Linux/Unix, Git, TCP/IP, Docker, Azure, Postman, REST API, Design Patterns, OOP