Georgii Skorokhod

Penultimate year CS student

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Education

- **University of St. Andrews** — St. Andrews, Scotland, UK
  Computer Science (BSc); Grade average: 17.5 / 20 (Year 2) — *Sep. 2022 - Present*
- **Bauman Engineering School №1580** — Moscow, Russia
  High School (Physics & Mathematics track); Grade average: 5.0 / 5.0 — *Sep. 2017 - Jun. 2022*

Experience

- **Research Intern (STARIS)** — St. Andrews, Scotland, UK
  University of St. Andrews — *Jun. 2024 - Present*

  As part of the St Andrews Research Internship Scheme (STARIS), I am working on the practical application of constraints programming to scheduling & workforce management problems, under the supervision of Dr. Ozgur Akgun

  - **Reactive UI with Svelte & Typescript**
    I have developed a reactive web application that gives users an intuitive way to enter employee data and availability, manage tasks, schedule shifts, and define the constraints that need to be satisfied
  - **Geocoding with the OSM API**
    To allow users to easily schedule shifts for different physical locations (such as offices, lecture theatres or hospital wards), I have developed an integration with the OpenStreetMaps API to look up coordinates & addresses and visualise them on an interactive map
  - **Constraints modelling**
    I have worked on logic to generate an input file to the Conjure constraints modelling tool based on the data provided by the user, including handling custom user-defined constraints
  - **CI and TDD**
    I have developed unit tests for my code with Vitest and integration tests with Playwright, and automated linting, testing & deployment using GitHub Actions

- **Vertically Integrated Project - Constraints Modelling** — St. Andrews, Scotland, UK
  University of St. Andrews; Grade achieved: 20 / 20 — *Sep. 2023 - May 2024*

  As part of the Vertically Integrated Project (VIP), I have worked with a team of students and university staff on the conjure-oxide project - a full Rust rewrite of the conjure constraints modelling tool, focusing on a clean architecture, compile-time optimization, and support for incremental solving

  - **Rust**
    Working on this project, I have learned the Rust programming language and gained a better understanding of memory management, concurrency, and the cargo build system
  - **Developing an Essence language compiler**
    I have worked on developing a Rust representation of the Essence language AST, and a rule engine to traverse this AST and rewrite it into a low-level, solver-specific representation by recursively applying rules (similar to how the Haskell compiler works). As part of this, I have developed macros to auto-generate the necessary code for traversing the AST in a generic way (see the PR).
  - **AGILE**
    I have worked as a part of a multi-year team of students, using git for version control & collaboration, and following the AGILE software development methodology

Extracurricular Activities

- **Committee Member for Research** — St. Andrews, Scotland, UK
  Campaign for Affordable Student Housing (CASH) — *May 2024 - Present*

  - **The St. Andrews Rent Map**
    One of my main tasks is administering an annual survey of students & community members about their housing situation, analysing the data, and creating a visual map of rental prices around St Andrews

- **Research & Support**
  As a CASH committee member, my core mission is doing research to provide informational support for the campaign and to ensure that it can continue to operate safely and effectively, as well as informing other students about their rights as tenants
- **The St. Candrews Food Bank**
  I have also taken part in organising donation drives for a student-operated food bank to help students and other members of our community who are struggling with the cost of living

Projects

- **Pygame Chess**
  A simple chess game written in Python, complete with an opponent bot based on the MinMax algorithm.
- **Linux Homelab**
  I am using a Linux PC to self-host a file sharing service & gaming servers for myself and my friends, automatic regular backups of important files from my laptop, and my website at gskorokhod.com (currently under development).
  This has helped me learn Docker, the UNIX command line, and the basics of web technology.
- **Greenbox**
  In high school, I have worked with a team of students to develop a fully automated mini-greenhouse for herbs & microgreens based on the Arduino microcontroller, including climate control, lighting, watering, and a configuration UI (via an LCD screen). Our project has won a bronze medal for the Russian delegation at the International Exhibition for Young Inventors (IEYI-2019) in Jakarta.

Skills

- **Programming languages** : Rust, C, Python, Java, Typescript, JS + HTML + CSS, SQL
- **Skills & Frameworks** : Git, Docker, UNIX Shell, Tensorflow, Node.js, Svelte, React, SQL Databases
- **Fundamentals** : Algorithms & Data Structures, Networking, OS Programming, Web Development
- **Natural languages** : English (IELTS 8.0), Russian (native), German (beginner)

Modules

- **CS2002 - Computer Systems** Grade: 17.6 / 20
  University of St. Andrews *2023-2024*

  Learned about the DPLL algorithm, system calls, inline assembly, memory management and concurrency in C, and developed a C program for generating the truth tables of logical expressions

- **CS2001 - Foundations of Computation** Grade: 17.3 / 20
  University of St. Andrews *2023-2024*

  Learned some fundamental concepts in computer science, including Finite State Automata, Grammars, Computational complexity & the Big-O Notation, as well as practiced implementing trees, hash sets and other data structures in Java

- **CS2003 - The Internet and the Web** Grade: 16.8 / 20
  University of St. Andrews *2023-2024*

  Learned about the OSI model and the fundamentals of networking, developed a simple client-server multi-user CLI messaging application using Java sockets, built a REST API server in Node.js and practiced frontend development

- **IE1250 - Mathematics B** Grade: 17.7 / 20
  University of St. Andrews *2022-2023*

  As part of the International Foundation program, I have taken a module covering the basics of algebra & calculus, such as limits, integration & differentiation, series, complex numbers, and linear algebra