Emil Emilov Indzhev

Curriculum Vitae

Education

2018 – Pres. **St Catherine's College, University of Oxford, UK**
BSc & MSc Computer Science
First year grade: 85.75/100
First year rank: 2nd place

2013 – 2018 **Baba Tonka Upper High School of Mathematics, Ruse, Bulgaria**
Secondary Education
Final grade: 5.91/6

Work experience

July 2020 – Present

Jane Street
Software Engineering Intern

Working on an internal tool used for managing database permissions and roles based on given specifications. Also had a lot of trading related classes and participated in several mock trading competitions between interns.

July 2019 – September 2019

Ocado Technology
Software Engineering Intern

Part of the Machine Learning Research team in Sofia. Worked on a reinforcement learning project about training a robotic arm. Added custom features and environments to the company branch of the Robosuite simulator.

September 2018 – February 2019

Musala Soft
Software Developer

Developing algorithmic problems for and generally supporting Musala Soft's international programming competition CodeIT. Prepared the problems for two "sprint" rounds and one "marathon" round, which consist of several short problems and a long optimizational problem respectively.

Ongoing

Informatics and Linguistics Competitions
Problem Setter and Grader

Frequently setting problems for Bulgarian national and international competitions in informatics such as IATI, The National Olympiad in Informatics and others. Also, occasionally setting problems for the linguistics competitions, as well as grading the works of the competitors.

Personal projects

Particle Structures

A physics simulation with procedurally generated physical laws. Each pair of particle types has two different types of interactions with varying strengths. One is repulsive and the other attractive. The laws are set up in such a way that the system always achieves a stable equilibrium, where the particles are arranged in interesting lattices.

Kigarai

A machine learning library for C++ built from scratch. Supports most common types of layers and activation functions, as well as adding custom ones. Most frequently used network architectures, such as CNNs, can be implemented with the built-in features.

Evolving Snakes

Snakes in an environment similar to the classical game Snake are controlled by neural networks and can reproduce. The snakes evolve, while varying emergent behaviors arise. They also have access to internal memory, which can lead to interesting strategies, such as zigzagging in order to explore more locations faster.

AIs for Games

AIs for various games such as Hanabi, Bulls and Cows, Despirala, Colonel Blotto and planning to start on 7 Wonders. Some are based on hardcoded heuristics or various search algorithms, though in some cases the main concern is finding efficient Monte Carlo approaches to approximating some distribution.

Physics Simulation

Physics simulation made up of basic building blocks, such as particles with electrical charges and springs. Complex physical phenomena, such as wave diffraction and electric dipoles, appear without being preprogrammed in the simulation.

IUPAC Name Generator

Generates the scientific names of complex organic compounds according to the IUPAC specifications. Also supports generating a compound when given its name, but this feature works only for a more limited set of simpler compounds.

Achievements and awards

International competitions

2020 **Google Hash Code**
Finalist, with team Eel

2018 **Microsoft Bubble Cup**
Finalist, with team nikva tikva

2017 **International Autumn Tournament in Informatics**
Bronze Medal

2017 **International Linguistics Olympiad**
Bronze Medal

2016 **International Autumn Tournament in Informatics**
Bronze Medal

2015 **Balkan Olympiad in Informatics**
Bronze Medal

2014 **Junior Balkan Olympiad in Informatics**
Gold Medal

2014 **International Conference on Computer Systems and Technologies**
Crystal Prize for Best Paper

Notable national competitions

2018 **National Olympiad in Linguistics**
Silver Medal

2018 **Spring Competition in Informatics**
Gold Medal

2018 **National Olympiad in Physics**
Laureate

2018 **National Olympiad in Informatics**
Gold Medal

2017 **Autumn Competition in Physics**
Silver Medal

2017 **Young Physicists' Tournament**
First Place, with team Perun

Software skills

Languages	C++, C, Python, OCaml, Scala, Haskell, C#, JavaScript
Platforms	Windows, Linux
Other	LaTeX, Microsoft Office, Google Sheets, Git

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Other Activities

March 2020 – Present
Oxford Guild of Assassins
Guild Master

Organizing games for the guild, updating the Facebook page, booking slots at fairs, distributing work among the rest of the cabal (committee) and, in general, managing the guild.

October 2019 – June 2020
Oxford Bulgarian Society
Secretary

Communicating with the UAS Club Office, potential sponsors and anyone else trying to contact the society.

October 2019 – April 2020
Oxford
Bulgarian Language Tutor

Private tutoring in Bulgarian. Preparing study materials, such as exercises and a description of the grammar, written in a easy to learn way.

March 2019 – March 2020
Oxford Guild of Assassins
Secretary

Writing and responding to e-mails, preparing pamphlets and supporting the guild master.

Ongoing
Various Places
Competitive Programming Lecturer

Occasionally holding lectures on competitive informatics topics such as some advanced algorithms and data structures at various summer schools, academies, etc.

Language skills

Bulgarian	Native
English	Fluent, IELTS Academic: 8/9
Esperanto	Beginner
German	Basic