

EDUCATION

Master of Computer Science

Saint Petersburg Higher School of Economics

Pursuing a Masters degree in Programming Languages

First Year GPA: 4.82 out of 5 (96.4%)

Sep 2019 – Jun 2021

Bachelor of Computer Science

Saint Petersburg Higher School of Economics

BSc (Hons) degree in Programming Languages

Grade: Honours degree with a total GPA of 9.6 out of 10 (96%)

Thesis: The Inhabitation Problem for Rank Two Intersection Types

Sep 2015 – Jun 2019

PUBLICATIONS

[1] PerSeVerE: Persistency Semantics for Verification under Ext4

Michalis Kokologiannakis, **Ilya Kaysin**, Azalea Raad, Viktor Vafeiadis

Principles of Programming Languages (POPL), 2021 (to appear), CORE A*-ranked

[2] Mechanising Data Race Freedom Guarantee Proofs for the Weakestmo Model

Ilya Kaysin (poster entry)

Student Research Competition (SRC) at POPL 2020

RESEARCH EXPERIENCE

Max Planck Institute for Software Systems | *Research Intern*

Project Title: *File System Persistency Models*

Supervisor: Dr Viktor Vafeiadis

- I built a formal consistency and persistency model for the ext4 file system
- I developed thorough proofs for the lemmas and theorems associated with the model
- My model formed the basis of a state-of-the-art model checker, uncovering several bugs in text editors such as *nano* and *vim*
- I co-authored a paper disseminating the results [1], to appear at POPL 2021

Jan – Mar 2020

JetBrains Research | *Researcher*

Supervisor: Dr Anton Podkopaev

- I work in the *Programming Languages Lab* at JetBrains Research
- I belong to the *Weak Memory* team researching memory models (concurrent semantics) for programming languages and processors
- My research focus is weak consistency and persistency models, formal verification and proof mechanisation

Jun 2019 – Present

TEACHING EXPERIENCE

Functional Programming TA | *Higher School of Economics*

Assisted with the *Functional Programming* (Haskell) course to a group of 13 students

Helped students understand the lectures better and answered questions

Sep – Dec 2020

Algorithms Teacher | *School No. 7 in Noyabrsk*

Organised a one-week training camp for 20 high school students in the Yamal region

Trained the students in solving competitive programming problems in Python

Nov 2020 and Jan 2019

AWARDS AND SCHOLARSHIPS

- Semi-finalist in the *Student Research Competition (SRC)* at POPL 2020 (New Orleans, USA)
Awarded travel scholarship (\$500) to attend the event
- Travel scholarship (\$1100) to attend the *VMCAI Winter School, 2020* (New Orleans, USA)
- Travel scholarship (\$360) to attend the *SPLASH PLMW* (Programming Languages Mentoring Workshop), 2019 (Athens, Greece)
- Eighth place in the final round of *Google Hash Code, 2018* (Dublin, Ireland)
Awarded travel scholarship (€541) to attend the event
The top 40 teams worldwide from the previous rounds compete to solve optimisation problems
- Scholarship (approx. \$1600) from the government of St. Petersburg for achievement in the field of information technology (2015-2017)
- Bronze medal in the *15th All-Russian Team Olympiad in Informatics, 2015*
- Prize (ninth place in the age group) in the *All-Russian Olympiad in Informatics, 2014*
The most prestigious Russian programming competition amongst the top 300 high school students

SCHOOLS AND CONFERENCES

- *Programming Languages Mentoring Workshop (PLMW)* at SPLASH 2020 (online)
- *VMCAI Winter School, 2020* (New Orleans, USA)
- *Principles of Programming Languages (POPL), 2020* (New Orleans, USA)
- *Google Compiler and Programming Language Summit, 2019* (Munich, Germany)
- *Programming Languages Mentoring Workshop (PLMW)* at SPLASH 2019 (Athens, Greece)
- *Summer School on Probabilistic Programming, 2019* (Saint Petersburg, Russia)
- *Summer School on Practice & Theory of Distributed Computing, 2019* (Saint Petersburg, Russia)

SKILLS

- **Programming languages:** Java, C, Python, Kotlin, Haskell
- **Theorem Provers:** Coq
- **Databases:** PostgreSQL
- **Mathematics:** solid knowledge of combinatorics, statistic, algebra, type theory, category theory
- **Algorithms and data structures:** solid knowledge across the range from basics such as heaps and Dijkstra's algorithms to advanced ones such as Dinic's algorithm, treap and FFT
- **Machine learning (ML):** familiar with classical ML (decision trees, PCA, SVM), deep learning (CNN, RNN) and reinforcement learning
- **Miscellaneous:** the Linux Kernel, PyTorch, ANTLR, JUnit, Akka