Konstantinos Kallas

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Education

University of Pennsylvania *September 2018 – present*
Computer and Information Science, PhD student
Advisor: Prof. Rajeev Alur

Eighth Summer School on Formal Techniques *May 2018*
Menlo College, Atherton, CA
Organised by SRI International

National Technical University of Athens *October 2012 – February 2018*
Electrical and Computer Engineering, Diploma
Thesis: *"HiPErJiT: A Profile-Driven Just-in-Time Compiler for Erlang"*
Advisor: Prof. Kostis Sagonas

Universita degli Studi dell'Aquila *February 2015 – July 2015*
Computer Science, Erasmus Mobility Program

Working Experience

Research Intern *May 2020 - August 2020*
Microsoft Research, Redmond, US
Internship in the RiSE group; advised by Sebastian Burckhardt.
Worked on an execution engine for stateful serverless applications.

Software Engineering Intern *May 2019 - August 2019*
Amazon Web Services, New York, US
Internship in the Automated Reasoning Group; advised by Daniel Schwartz-Narbonne.
Worked on the verification of critical C code.

Google Summer of Code Student *May 2017 - September 2017*
Worked with BEAM Community to extend the *ejabberd* open source project.
Implemented support for the *"Let's Encrypt" ACME* certificate acquiring protocol.

Big Data Application Developer *June 2016 - September 2016*
Everis, Barcelona, Spain
Internship at the Big Data Center of Excellence.
Developed Big Data Applications using a plethora of tools in the Hadoop ecosystem.

Teaching Experience

Teaching Assistant *Fall 2019*
Institution: University of Pennsylvania
Course: *Software Foundations*, Graduate level
Professor: Benjamin Pierce

Lab Assistant *Fall 2017*
Institution: National Technical University of Athens
Course: *Introduction to Programming*, Undergraduate level
Professors: S. Zachos, N. Papaspyrou, V. Kantere, and P. Potikas

Publications

Serverless Workflows with Durable Functions and Netherite.
Sebastian Burckhardt, Chris Gillum, David Justo, Konstantinos Kallas, and Christopher S. Meiklejohn.
In submission.

Flumina: Stream Processing with Specification-Guided Synchronization.
Konstantinos Kallas*, Filip Niksic*, Caleb Stanford*, and Rajeev Alur.
In submission.

An Order-aware Dataflow Model for Parallel Unix Pipelines.
Shivam Handa*, Konstantinos Kallas*, Nikos Vasilakis*, and Martin Rinard.
Proceedings of the ACM on Programming Languages (ICFP 2021).

Synchronization Schemas.
Rajeev Alur, Phillip Hillard, Zachary G. Ives, Konstantinos Kallas, Konstantinos Mamouras, Filip Niksic, Caleb Stanford, Val Tannen, and Anton Xue.
Invited Paper at Proceedings of the 40th Symposium on Principles of Database Systems (PODS 2021).

Unix Shell Programming: The Next 50 Years.
Michael Greenberg*, Konstantinos Kallas*, and Nikos Vasilakis*.
Proceedings of the Workshop on Hot Topics in Operating Systems (HotOS 2021).
Distinguished Presentation Award.

PaSh: Light-touch Data-Parallel Shell Processing.
Nikos Vasilakis*, Konstantinos Kallas*, Konstantinos Mamouras, Achilleas Benetopoulos, and Lazar M. Cvetković.
Proceedings of the Sixteenth European Conference on Computer Systems (EuroSys 2021).
Best Paper Award.

Code-level model checking in the software development workflow at Amazon Web Services.
Nathan Chong, Byron Cook, Jonathan Eidelman, Konstantinos Kallas, Kareem Khazem, Felipe R. Monteiro, Daniel Schwartz-Narbonne, Serdar Tasiran, Michael Tautschnig, and Mark R. Tuttle.
Software: Practice and Experience 2021.

DiffStream: Differential Output Testing for Stream Processing Programs.
Konstantinos Kallas*, Filip Niksic*, Caleb Stanford*, and Rajeev Alur.
Proceedings of the ACM on Programming Languages (OOPSLA 2020).

Code-Level Model Checking in the Software Development Workflow.
Nathan Chong, Byron Cook, Konstantinos Kallas, Kareem Khazem, Felipe R. Monteiro, Daniel Schwartz-Narbonne, Serdar Tasiran, Michael Tautschnig, and Mark R. Tuttle.
42st International Conference on Software Engineering: Software Engineering in Practice (ICSE-SEIP 2020).

Security Criteria for a Transparent Encryption Layer.
Konstantinos Kallas, Clara Schneidewind, Benjamin C. Pierce, and Steve Zdancewic.
Workshop on Foundations of Computer Security (FCS 2019).

HiPErJiT: A Profile-Driven Just-in-Time Compiler for Erlang.
Konstantinos Kallas and Konstantinos Sagonas.
30th Symposium on Implementation and Application of Functional Languages (IFL 2018).

Note: * indicates equal contribution.

Honors and Awards

A.G. Leventis Foundation PhD Grant *2021-2022*

ACM SRC Grand Finals *2021*
2nd place among SRC winners across all ACM conferences.

HotOS 2021 Distinguished Presentation Award *2021*
Awarded for "Unix Shell Programming: The Next 50 Years".

EuroSys 2021 Best Paper Award *2021*
Awarded for "PaSh: Light-touch Data-Parallel Shell Processing".

POPL Student Research Competition *2021*
1st place at the graduate category of the research competition.
Presented work on a parallelizing JiT compiler for shell scripts.

Gerondelis Foundation PhD Award *2020*

Programming Competitions *2015-2018*
Participation in many programming competitions. Notable examples:
ICFP Programming Contest 2018 (Lightning) *10th out of 91 teams*,
IEEE Xtreme 2017 *Top 5%* and *3rd* in Greece, IEEE Xtreme 2016 *Top 10%*

Heterogenous Computing Student Challenge Certificate *2017*
HiPEAC CSW, Zagreb, Croatia
Optimizing GPU implementation of the K-means algorithm (NTUA-team)
Supervision: Prof. Georgios Goumas

EESTech Challenge *2017*
Supervised Machine Learning Hackathon
Joint 1st place among 40 teams.

The Great Moment of Education Scholarship from Eurobank EFG *2012*
Achieving the highest rank in national qualifications exams in Dionisos high school.

9th European Union Science Olympiad *2011*
Team-based science competition in Biology, Chemistry, and Physics.
1st place in local round and *3rd place* in national round.

Mathematical Competition, Hellenic Mathematical Society *2010*
Mathematical competition for high school students.
Distinction in the 1st and 2nd local round.

Languages **Greek** (Native), **English** (C2), **Italian** (C1), **German** (B2)