Konstantinos Kallas

Contact	Email: kallas@seas.upenn.edu – Website: angelhof.github.io

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 2021*

Institution: University of Pennsylvania
Course: *Computer-Aided Verification*, Graduate level
Professor: Rajeev Alur

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

Executing Shell Scripts in the Wrong Order, Correctly.
Georgios Liargkovas, Konstantinos Kallas, Michael Greenberg, and Nikos Vasilakis.
Workshop on Hot Topics in Operating Systems (HotOS 23).

DiSh: Dynamic Shell-Script Distribution.
Tammam Mustafa, Konstantinos Kallas, Pratyush Das, and Nikos Vasilakis.
20th USENIX Symposium on Networked Systems Design and Implementation (NSDI
23).

Executing Microservice Applications on Serverless, Correctly.
Konstantinos Kallas, Haoran Zhang, Rajeev Alur, Sebastian Angel, and Vincent Liu.
Proceedings of the ACM on Programming Languages (POPL 2023).

Practically Correct, Just-in-Time Shell Script Parallelization.
Konstantinos Kallas, Tammam Mustafa, Jan Bielak, Dimitris Karnikis, Thurston
Dang, Michael Greenberg, and Nikos Vasilakis.
16th USENIX Symposium on Operating Systems Design and Implementation (OSDI
22).

Netherite: Efficient Execution of Serverless Workflows.
Sebastian Burckhardt, Badrish Chandramouli, Chris Gillum, David Justo, Konstantinos Kallas, Connor McMahon, Christopher S. Meiklejohn, and Xiangfeng Zhu.
Proceedings of the VLDB Endowment (VLDB 2022).

Stream Processing with Dependency-Guided Synchronization.
Konstantinos Kallas*, Filip Niksic*, Caleb Stanford*, and Rajeev Alur.
Proceedings of the 27th ACM SIGPLAN Symposium on Principles and Practice of
Parallel Programming (PPoPP 2022).

Charon: A Framework for Microservice Overload Control.
Jiali Xing, Max Demoulin, Konstantinos Kallas, and Benjamin C. Lee.
Proceedings of the 18th ACM Workshop on Hot Topics in Networks (HotNets 2021).

Durable Functions: Semantics for Stateful Serverless.
Sebastian Burckhardt, Chris Gillum, David Justo, Konstantinos Kallas, Connor McMahon, and Christopher S. Meiklejohn.
Proceedings of the ACM on Programming Languages (OOPSLA 2021).

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.

The Future of the Shell: Unix and Beyond.
Michael Greenberg*, Konstantinos Kallas*, and Nikos Vasilakis*.
Panel at the Workshop on Hot Topics in Operating Systems (HotOS 2021).

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.

Preventing Dynamic Library Compromise on Node. js via RWX-Based Privilege Reduction.
Nikos Vasilakis, Cristian-Alexandru Staicu, Grigoris Ntousakis, Konstantinos Kallas, Ben Karel, André DeHon, and Michael Pradel.
Proceedings of the ACM SIGSAC Conference on Computer and Communications Security (CCS'21).

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**	*2021-2023*
	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*