

# ORESTIS MELKONIAN

## PERSONAL DATA

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PLACE | DATE OF BIRTH: Athens, Greece | December 1992  
EMAIL: [melkon.or@gmail.com](mailto:melkon.or@gmail.com)  
WEBSITE: [omelkonian.github.io](https://omelkonian.github.io)

## EDUCATION

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SEP 2019 - NOW PhD in COMPUTER SCIENCE @ **University of Edinburgh**, Scotland  
*Institute:* Laboratory for Foundations of Computer Science (LFCS)  
*Supervisor:* Philip Wadler  
*Topic:* Formalizing Blockchain Semantics in Agda

SEP 2017 - JUL 2019 M.Sc. in COMPUTING SCIENCE @ **Utrecht University**, The Netherlands  
*GPA:* 8.99/10 (*cum laude*)  
*Specialization:* Programming Technology  
*Supervisors:* Wouter Swierstra (UU), Manuel M.T. Chakravarty (IOHK)  
*Thesis:* Formalizing Extended UTxO and BitML Calculus in Agda

OCT 2010 - APR 2016 B.Sc. in COMPUTER SCIENCE @ **National and Kapodistrian University of Athens**, Greece  
*GPA:* 8.6/10 (*distinction*)  
*Specializations:* Knowledge and Data Management, Software  
*Supervisors:* Panos Rondogiannis, Angelos Charalambidis  
*Thesis:* RHEA - A Reactive, Heterogeneous, Extensible and Abstract Framework for Dataflow Programming

FEB 2014 - Jul 2014 Erasmus exchange student in COMPUTER SCIENCE  
**Universita della Svizzera Italiana**, Lugano, Switzerland  
*Coordinators:* Ioannis Emiris, Marc Langheinrich

## WORK EXPERIENCE

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FEB 2021 - MAR 2023 Haskell Reviewer (part-time) @ **MigaMake**, Singapore  
*Reviewing code, technical reports, and scientific articles*  
*Supervisor:* Michal Gajda

JAN 2019 - JUL 2019 Haskell Developer (part-time) @ **QBayLogic**, The Netherlands  
*Implemented a GUI to inspect optimization steps in the Clash compiler*  
*Supervisor:* Christiaan Baaij

DEC 2017 - DEC 2018 Haskell Developer (part-time) @ **Utrecht University**, The Netherlands  
*FORMALZ: A tower-defence game for learning Hoare-style specifications*  
*Developed the SMT-based checker between teacher and student formulas*  
*Supervisor:* Wishnu Prasetya

JUN 2017 - AUG 2017 Research Intern @ **Max Planck Institute for Software Systems (MPI-SWS)**, Germany  
*Software Analysis & Verification Group*  
*Proof mechanization of a novel C/C++11 memory model in Coq*  
*Supervisor:* Viktor Vafeiadis

MAY 2016 - MAY 2017 Technical Intern (*Backend Web Developer*) @ **CERN**, Switzerland  
*INVENIO project: Video workflows for the Cern Document Server (CDS)*  
*Supervisor:* Ludmila Marian

OCT 2015 - APR 2016 Research Intern @ **National Center for Scientific Research "Demokritos"**, Athens, Greece  
*Software & Knowledge Engineering Laboratory (SKEL)*  
*Design and implementation of a dataflow framework for robotics*  
*Supervisor:* Angelos Charalambidis

## TEACHING EXPERIENCE

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SEP 2020 - MAR 2021 **Reasoning & Agents** @ University of Edinburgh  
*Demonstrator & Marker*

SEP 2019 - MAR 2020 **Types and Semantics for Programming Languages** @ University of Edinburgh  
*Teaching Assistant*

SEP 2019 - MAR 2021 **Introduction to Computation: Functional Programming** @ University of Edinburgh  
*Teaching Assistant & Tutor & Marker*

## RESEARCH INTERESTS

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- Functional Programming
- Programming Languages, Semantics
- Type Systems, Formal Semantics
- Verification, Formal Methods
- Compilers, Static Analysis
- Category Theory
- Proof Theory, Theorem Provers
- Algorithmic Music

## PUBLICATIONS

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|                       |   |
|-----------------------|---|
| HASKELL '22<br>(ICFP) | <b>Reasonable Agda is correct Haskell: writing verified Haskell using AGDA2HS</b><br>J.Cockx, O.Melkonian, L.Escot, J.Chapman, U.Norell<br><i>15th International Haskell Symposium. ACM</i>   |
| ISOLA '20             | <b>UTXO<sub>ma</sub>: UTXO with Multi-Asset Support</b><br>M.Chakravarty, J.Chapman, K.MacKenzie, O.Melkonian, J.Müller, M.Jones, P.Vinogradova, P.Wadler<br><i>9th International Symposium On Leveraging Applications of Formal Methods, Verification and Validation</i> |
| ISOLA '20             | <b>Native Custom Tokens in the Extended UTXO Model</b><br>M.Chakravarty, J.Chapman, K.MacKenzie, O.Melkonian, J.Müller, M.Jones, P.Vinogradova, P.Wadler<br><i>9th International Symposium On Leveraging Applications of Formal Methods, Verification and Validation</i>  |
| ECOOP '20             | <b>Reconciling Event Structures with Modern Multiprocessors</b><br>E.Moiseenko, A.Podkopaev, O.Lahav, O.Melkonian, V.Vafeiadis<br><i>34th European Conference on Object-Oriented Programming</i>  |
| WTSC'20<br>(FC)       | <b>The Extended UTXO Model</b><br>M.Chakravarty, J.Chapman, K.MacKenzie, O.Melkonian, M.Jones, P.Wadler<br><i>4th Workshop on Trusted Smart Contracts</i>   |
| SRC'19<br>(ICFP)      | <b>Formalizing BitML Calculus in Agda (Extended Abstract)</b><br>Orestis Melkonian<br><i>Student Research Competition, Poster Session</i>   |
| TYDE'19<br>(ICFP)     | <b>Formal Investigation of the Extended UTxO Model (Extended Abstract)</b><br>Orestis Melkonian, Wouter Swierstra, Manuel M.T. Chakravarty<br><i>4rd ACM SIGPLAN International Workshop on Type-Driven Development. ACM</i>   |
| FARM'19<br>(ICFP)     | <b>Music as Language: Putting Probabilistic Temporal Graph Grammars to Good Use</b><br>Orestis Melkonian<br><i>7th ACM SIGPLAN International Workshop on Functional Art, Music, Modeling, and Design. ACM</i>   |
| FARM'19<br>(ICFP)     | <b>What Constitutes a Musical Pattern?</b><br>Orestis Melkonian, Iris Yuping Ren, Wouter Swierstra, Anja Volk<br><i>7th ACM SIGPLAN International Workshop on Functional Art, Music, Modeling, and Design. ACM</i>  |
| ICSE'19               | <b>Having Fun in Learning Formal Specifications</b><br>Wishnu Prasetya, Craig Leek, Orestis Melkonian <i>et al.</i><br><i>41th International Conference on Software Engineering: Software Engineering Education and Training. ACM</i>                                     |
| REBLS'18<br>(SPLASH)  | <b>RHEA: A Reactive, Heterogeneous, Extensible and Abstract Framework for Dataflow Programming</b><br>Orestis Melkonian, Angelos Charalambidis<br><i>5th ACM SIGPLAN International Workshop on Reactive and Event-Based Languages and Systems. ACM</i>                    |
| ESSLI'18              | <b>D<sup>3</sup> as a 2-MCFL</b><br>Konstantinos Kogkalidis, Orestis Melkonian<br><i>Student Session of the 30th European Summer School in Logic, Language and Information. Springer</i>  |

## ACADEMIC SERVICE

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| FEB 2023 | Artifact Evaluation Committee Member @ <b>ESOP</b> : European Symposium on Programming, 2023   |
| NOV 2022 | Organiser @ <b>31<sup>st</sup> Agda Implementors' Meeting</b> , Edinburgh, Scotland  |
| OCT 2022 | Artifact Evaluation Committee Member @ <b>POPL</b> : Symposium on Principles of Programming Languages, 2023                                |
| JUN 2022 | Artifact Evaluation Committee Member @ <b>ICFP</b> : International Conference on Functional Programming, 2022                              |
| MAR 2022 | (Invited) Paper Reviewer @ <b>Post-TYPES</b> proceedings   |
| FEB 2022 | Artifact Evaluation Committee Member @ <b>ESOP</b> : European Symposium on Programming, 2022   |
| JUL 2021 | (Invited) Paper reviewer @ <b>APLAS</b> : Asian Symposium on Programming Languages and Systems   |
| AUG 2021 | (Invited) Paper Reviewer @ <b>MSCS</b> : Mathematical Structures in Computer Science<br><i>special edition in memory of Martin Hofmann</i> |

## AWARDS

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JUN 2022 Travel Grant @ **Programming Language Mentoring Workshop (PLMW)**, PLDI, San Diego, US  
JUN 2019 Travel Grant @ **ZuriHac: A 3-day Haskell Hackathon**, Zurich, Switzerland  
APR 2019 Travel Grant @ **School and Workshop on Univalent Mathematics**, Birmingham, UK  
AUG 2018 Registration Grant @ **European Summer School on Logic, Language & Information (ESSLI)**, Sofia, Bulgaria  
JUL 2018 Travel Grant @ **DeepSpec Summer School**, Princeton, US  
JUL 2017 Travel Grant @ **CAV Conference**, Heidelberg, Germany  
JAN 2016 Travel Grant @ **Programming Language Mentoring Workshop (PLMW)**, POPL, Florida, US  
MAR 2016 Travel Grant @ **Meddays '16**, Sophia-Antipolis, France

## LANGUAGES

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GREEK: Native speaker  
ENGLISH: **Fluent**, *Certificate of Proficiency, University of Michigan*  
GERMAN: **Intermediate**, *Zertifikat B1, Goethe Institute*  
FRENCH: **Beginner**, *A2.1, Supercomm Suisse SA*

## EXTRA-CURRICULAR ACTIVITIES

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**Musical Instrument:** Electric jazz guitar (Intermediate)  
**RGT Grade 6** (*distinction*)  
*UWLQ Level 3 Certificate in Music Performance*  
University of West London  
*Examiner:* Adam Moore BA(Hons), MMus, PGCE, FLCM

(Algorithmic) Music Composition, Films, Philosophy, Literature, Traveling

## REFERENCES

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| <b>Philip Wadler</b><br>University of Edinburgh<br>✉ <a href="mailto:wadler@inf.ed.ac.uk">wadler@inf.ed.ac.uk</a> | <b>Wouter Swierstra</b><br>Utrecht University<br>✉ <a href="mailto:w.s.swierstra@uu.nl">w.s.swierstra@uu.nl</a> | <b>Manuel M.T. Chakravarty</b><br>IOHK<br>✉ <a href="mailto:manuel.chakravarty@iohk.io">manuel.chakravarty@iohk.io</a> | <b>Viktor Vafeiadis</b><br>MPI-SWS<br>✉ <a href="mailto:viktor@mpi-sws.org">viktor@mpi-sws.org</a> |
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