PAPADIMITRIOU MICHAIL

PhD Candidate/Research Software Engineer

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EXPERIENCE

PhD Candidate

University of Manchester

January 2018 – Ongoing | Manchester, UK

- Development of a Java-based optimizing compiler backend with GraalVM for OpenCL code generation.
- Development and evaluation of optimization phases using the Graal IR to expose memory hierarchy at compile time.
- Benchmarking and evaluation on multiple architectures (i.e., x86, PTX, OpenCL).
- Project maintenance and support for TornadoVM.

Research Software Engineer

University of Manchester

September 2017 – January 2018 | Manchester, UK

- Unit Testing automation with Python and Java (JUnit) for compiler development.
- Setting CI with Jenkins for GPU equipped servers.
- JVM compilation and optimization techniques.

Research Software Engineer

Huawei Technologies Co. Ltd.

January 2017 – August 2017 | Paris, France

- Modeling of parallel tasks targeting the Kalray platform.
- Development with different optimizations suits, such as IBM CP Optimizer and Google OR-tools for real-time scheduling problems.
- Performance evaluation for OpenMP, BSP library and CUDA applications.

Research Software Engineer

Ortec-Finance

January 2016 – August 2016 | Rotterdam, Netherlands

- Java development for computational finance models (e.g., Risk management models).
- Performance prototyping with OpenCL on the Intel Xeon Phi.
- Evaluation of OpenCL performance portability on various multi-core platforms (GPUs, Multi-core CPUs).

EDUCATION

Ph.D. in Computer Science

The University of Manchester

January 2018 – Ongoing

Topic: Improving the Acceleration of Java Programs on Heterogeneous Hardware Through Compiler and Run-time Support
Supervisor: Dr. Christos Kotselidis

M.Sc. in Embedded Systems

Delft University of Technology (TU Delft)

September 2014 – September 2016

Thesis: Accelerating Computational Finance Simulations with OpenCL: a case study
Grade: 7.54/10.00, Thesis Grade: 8.50/10.00

B.Eng. in Computer Systems Engineering

The University of Sheffield

September 2011 – June 2014

Thesis: Control Systems on Embedded Platforms
Grade: First Class Honors (1st) (Top 10%)

SCHOLARSHIPS & AWARDS

- **2020** MICRO 2020 ACM Student Research Competition Accepted Poster.
- **2020** HiPEAC Paper Award for publishing in FCCM.
- **2019** Grant to attend Google's Compiler and Programming Language Summit.
- **2019** HiPEAC Collaboration Grant for research visit to NTUA (5000€).
- **2019** HiPEAC AccelCloud Workshop: Contest on Accelerated Heterogeneous Cloud Computing.
- **2018** Grant to attend Google's Compiler and Programming Language Summit.
- **2018** Grant to attend HiPEAC's Summer school on Advanced Computer Architecture & Compilation for High-Performance (1000€).
- **2018** Scholarship from the Computer Science department of the University of Manchester covering the PhD's tuition fees and a yearly stipend.

PUBLICATIONS

Books

- Scionti, Alberto et al. (Sept. 2019). *Heterogeneous Computing Architecture - Challenges and Vision*. ISBN: 978-0-367-02344-7. DOI: 10.1201/9780429399602.

Conference Proceedings

- Papadimitriou, Michail, Juan Fumero, Athanasios Stratikopoulos, and Christos Kotselidis (2021). "Automatically Exploiting the Memory Hierarchy of GPUs through Just-in-Time Compilation". In: *Proceedings of the 17th ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments*. VEE 2021. Virtual: Association for Computing Machinery, pp. 165–178.
- Papadimitriou, Michail, Eleni Markou, et al. (2021). "Multiple-Tasks on Multiple-Devices (MTMD): Exploiting Concurrency in Heterogeneous Managed Runtimes". In: *Proceedings of the 17th ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments*. VEE 2021. Virtual: Association for Computing Machinery, pp. 125–138.
- Kotselidis, Christos et al. (Mar. 2020). "Efficient Compilation and Execution of JVM-Based Data Processing Frameworks on Heterogeneous Co-Processors". In:
- Fumero, Juan et al. (2019). "Dynamic Application Reconfiguration on Heterogeneous Hardware". In: *Proceedings of the 15th ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments*. VEE 2019. Providence, RI, USA: Association for Computing Machinery, pp. 165–178. ISBN: 9781450360203. DOI: 10.1145/3313808.3313819. URL: https://doi.org/10.1145/3313808.3313819.
- Papadimitriou, M. et al. (Apr. 2019). "Towards Prototyping and Acceleration of Java Programs onto Intel FPGAs". In: *2019 IEEE 27th Annual International Symposium on Field-Programmable Custom Computing Machines (FCCM)*, pp. 310–310. DOI: 10.1109/FCCM.2019.00051.
- Clarkson, James, Juan Fumero, Michail Papadimitriou, Maria Xekalaki, et al. (2018). "Towards Practical Heterogeneous Virtual Machines". In: *Conference Companion of the 2nd International Conference on Art, Science, and Engineering of Programming*. Programming'18 Companion. Nice, France: Association for Computing Machinery, pp. 46–48. ISBN: 9781450355131. DOI: 10.1145/3191697.3191730. URL: https://doi.org/10.1145/3191697.3191730.
- Clarkson, James, Juan Fumero, Michail Papadimitriou, Foivos S. Zakkak, et al. (2018). "Exploiting High-Performance Heterogeneous Hardware for Java Programs Using Graal". In: *Proceedings of the 15th International Conference on Managed Languages & Runtimes*. ManLang '18. Linz, Austria: Association for Computing Machinery. ISBN: 9781450364249. DOI: 10.1145/3237009.3237016. URL: https://doi.org/10.1145/3237009.3237016.
- Papadimitriou, Michail, Joris Cramwinckel, and Ana Lucia Varbanescu (2017). "Speed-Up Computational Finance Simulations with OpenCL on Intel Xeon Phi". In: *Euro-Par 2016: Parallel Processing Workshops*. Ed. by Frédéric Desprez et al. Cham: Springer International Publishing, pp. 199–208. ISBN: 978-3-319-58943-5.

Journal Articles

- Papadimitriou, Michail, Juan Fumero, Athanasios Stratikopoulos, Foivos S. Zakkak, et al. (Oct. 2020). "Transparent Compiler and Runtime Specializations for Accelerating Managed Languages on FPGAs". In: *The Art, Science, and Engineering of Programming* 5.2. ISSN: 2473-7321. DOI: 10.22152/programming-journal.org/2021/5/8. URL: http://dx.doi.org/10.22152/programming-journal.org/2021/5/8.
- Papadimitriou, Michail, Juan Fumero, and Christos Kotselidis (2018). "Exploiting Programmability of FPGAs Through Managed Runtime Systems". en. In: DOI: 10.13140/RG.2.2.25640.21763. URL: http://rgdoi.net/10.13140/RG.2.2.25640.21763.

TEACHING

Teaching Asistant

University of Manchester

2018-2020 Manchester, UK

- **(COMP25511) - Operating Systems**
- **(COMP23311) - Software Engineering**
- **(COMP27112) - Computer Graphics and Image Processing**

SKILLS

Programming Languages
Professional level knowledge of **Java**, working experience with **Python**, **C/OpenCL** and **Bash** and familiarity with **C++** and **Scala**.

Parallel Programming Contructs
OpenCL, CUDA, OpenMP, BSP, Java-Threads.

Hardware Architectures
Intel FPGAs, Nvidia GPUs and Intel HD Graphics

Other techs & Tools
Git, Docker, Jenkins, JUnit, Graal-IR, Maven, JVisual and Intel Quartus Prime

LANGUAGES

Greek ●●●●●

English ●●●●●

French ●○○○○