

Thomas Kœhler

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I am a PhD student in computer science at the University of Glasgow in Scotland, where I work closely with my supervisor Michel Steuwer. I am part of the Rise team (rise-lang.org) which follows in the footsteps of the Lift project. Rise combines a high-level functional language with a system of rewrite rules which encode optimization choices. It provides a domain-agnostic and extensible way to generate high performance code for diverse hardware architectures. My research focuses on extending the Rise language and its compiler to image processing applications and their optimizations. Particularly, I am interested in whether and how the performance of the generated code can be competitive with hand-written code and with code generated by image processing specific compilers such as Halide.

EDUCATION

2018 🕒 3+ years	Ph.D in Computer Science University of Glasgow, Scotland, United Kingdom Supervisors: Michel Steuwer, Phil Trinder
2016–2018	Master of Software Science and Technology Sorbonne Universités (Université Pierre et Marie Curie), France <i>Parcours d'Excellence</i>
2014–2016	Licence of Computer Science (Bachelor) Sorbonne Universités (Université Pierre et Marie Curie), France <i>Mention Bien (High Commendation)</i>
2013–2014	Prépa intégrée (Engineering school preparation) Université Technologique de Compiègne, France
2013	Baccalauréat Scientifique (A Levels) Lycée Rodin, Paris 13e, France <i>Mention Très Bien (with honors)</i>

ATTENDED ACADEMIC EVENTS

2019, Dec.	<i>Google Compiler and Programming Language Summit, Munich, Germany</i>
October	<i>Scottish Programming Languages Seminar, Glasgow, UK</i>
August	<i>Scottish Programming Languages and Verification Summer School, Glasgow, UK</i>
July	<i>ACACES HiPEAC Summer School, Fiuggi, Italy</i>
June	<i>SICSA PhD Conference, University of Stirling, UK</i>
June	<i>Scottish Programming Languages Seminar, Edinburgh, UK</i>
April	<i>HiPEAC Computer Systems Week, Edinburgh, UK</i>
March	<i>Scottish Programming Languages Seminar, St Andrews, UK</i>

TEACHING

2019-2020 | *Lab Assistant: Systems Programming (H). Level 4 (SCQF Level 10)*
Lab Assistant: Programming Languages (H). Level 4 (SCQF Level 10)
University of Glasgow, UK


COMMUNITY INVOLVEMENT


2019 | Reviewing 2 artifacts for CGO 2020
2019-2020 | Intra-Systems Seminar Organizer, University of Glasgow, UK

TALKS

2019 | *Development of efficient image processing applications*
Systems Seminar, University of Glasgow, UK

EXPERIENCE

2018 | **Efficient object tracking algorithms on heterogeneous and parallel architectures**
 6 months
Laboratoire d'Informatique de Paris 6, France
Supervisors: Lionel Lacassagne, Emmanuel Chailloux

2017 | **Optical flow computing optimisation on GPU (CUDA)**
 2 months
Laboratoire d'Informatique de Paris 6, France
Meteorix Mission, observe meteors with a nanosatellite
Supervisor: Lionel Lacassagne

Personal | **Contribution to GFX-rs, a graphics API (Rust)**
Fixes, Additions, Modifications, Discussions
Binding of the Box2D physics engine (Rust)
Published under the name wrapped2d

Academic | Parallelisation of a checkmate decision (MPI, OpenMP)
Rush Hour solver (Rust)
Via minimisation (C)
HTTP server (C)
Robozzle game clone (OCaml)

PUBLICATIONS

A. Petreto, A. Hennequin, T. Koehler, T. Romera, Y. Fargeix, B. Gaillard, M. Bouyer, Q. Meunier and L. Lacassagne:
Energy and Execution Time Comparison of Optical Flow Algorithms on SIMD and GPU Architectures
DASIP 2018: Conference on Design and Architectures for Signal and Image Processing