New Operating Systems Group

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RWTH AACHEN UNIVERSITY

Group history

June 2023: Creation

That's it!

Teaching and Research Unit Operating Systems
Lehre- und Forschungsgebiet Betriebssysteme

Computer Science Department @ RWTH Aachen University

About myself

2016 – 2020: Ph.D. in Computer Science on Thread Scheduling
Whisper group @ Inria & Sorbonne University, Paris, France
Under the supervision of Gilles Muller and Julien Sopena

2021 – 2023: Postdoc
Distributed Systems and Operating Systems chair @ TU Munich
Under the supervision of Pramod Bhatotia

June 2023 – now: Professor @ RWTH
Operating Systems Group

Research interests

Operating systems (obviously), in the broad sense of the term

Scheduling　　　　　Binary translation　　　　　Virtualisation

Memory
management　　　　　Unikernels

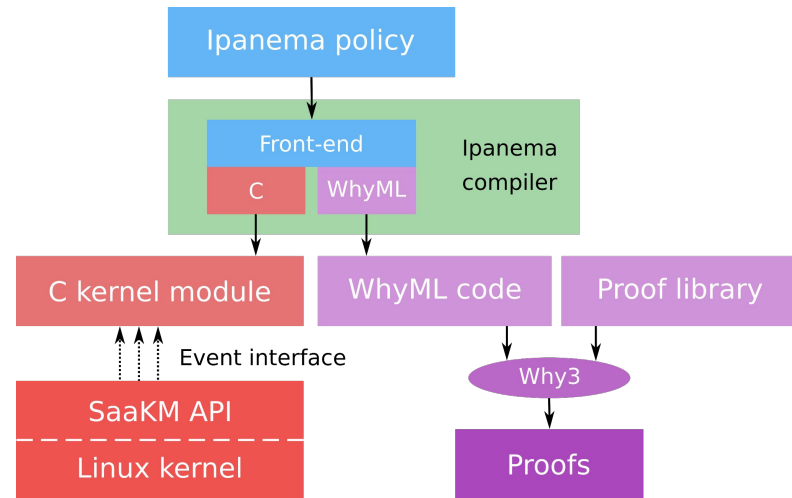More often than not with a sprinkle of **formal verification**

Scheduling

Back in the days of my Ph.D., I worked on
Ipanema, a Domain-Specific Language to write
kernel schedulers with formally verified
properties.

Enables users to use an application-specific
scheduler instead of the default Linux scheduler.

Published at EuroSys'20.

Similar work (without the verification) currently
done by Google [SOSP'21] and Meta
(sched_ext)

Binary translation

Binary translation for **strong-to-weak memory model architectures**
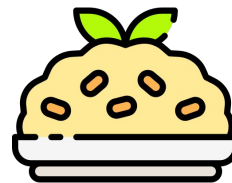*e.g., x86 -> Arm/RISC-V*

Lasagne [PLDI'22]
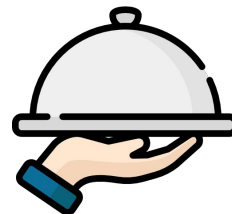Static binary translation with formally verified memory mappings

Risotto [ASPLOS'23]
Dynamic binary translation with formally verified memory mappings

Arancini [target OSDI'24]
Hybrid binary translation with formally verified memory mappings

Other projects (ongoing and future)

- Optimising page cache locality for NUMA architectures
- Modular application-specific schedulers
- Binary translation verifier
- Multiplexing network devices in virtualised systems
- Hardware-assisted memory sharing detector
- Multi-process unikernels
- Heterogeneous ISA operating system
- …

That's it!

Don't hesitate to hit me up if you wanna talk/collaborate! (in English 😅)

I have an open Ph.D. position if you have promising students graduating!
https://www.rwth-aachen.de/go/id/kbag/file/V000006023/lidx/1/

Links:
- https://os.rwth-aachen.de (online soon)
- https://redha.gouicem.fr