Kouds HALITIM

PhD student in control of HPC systems

gitlab.inria.fr/khalitim linkedin.com/in/kouds-halitim-12a031168
koudshalitim.github.io/koudshalitim
+33 687558515 @ kodshalitim344@gmail.com
8 rue de l'ecole, 38000 Grenoble, France

Skills

Control Systems	Linear/non-linear, stochastic, adaptive & robust control
Programming	C, C++, Python, MATLAB, R
Databases	MySQL
Tools & DevOps	Git, Docker, Make, Nix, VS Code
Operating Systems	Windows 11, Linux Ubuntu

Work Experience

Present – Nov. 2023 | **PhD Candidate in Control of HPC systems, INRIA**
Ctrl-A Team, Inria, LIG, Univ. Grenoble Alpes, Grenoble, France

Sept. 2023 – March 2023 | **Research Intern, INRIA**
Spirals Team, Inria, Lille, France

Jan. 2023 – Dec. 2022 | **Industrial Automation Intern, Sonatrach**
Sonatrach, Skikda, Algeria

March 2022 – April 2022 | **Embedded Systems Intern, Brandt**
Brandt, Sétif, Algeria

April 2021 – March 2021 | **Instrumentation Intern, IRIS**
IRIS, Sétif, Algeria

Education

November 2026 (Expected) | **PhD in Computer Science, INRIA**
Ctrl-A Team, Inria, LIG, Univ. Grenoble Alpes, Grenoble, France. "Efficient task hybridization in heterogeneous computing : a practical combination of control and scheduling theories."
Supervised by : Eric Rutten, Raphael Bleuse, and Bogdan Robu.

- Developed models for large-scale distributed systems (HPC) to account for system dynamics, resource constraints, and thermal uncertainties.
- Synthesized and implemented controllers to regulate trade-offs between file system congestion, resource harvesting and power consumption.
- Designed a Stochastic Model Predictive Control framework to optimize task injection under high uncertainty and variable workload conditions.
- Formulated I/O interference as a control problem and implemented regulation mechanisms for multi-client environments to ensure performance isolation.
- Built large-scale experimental testbeds and automated data collection to validate theoretical models against state-of-the-art heuristics.
- Conducted robustness analyses and comparative evaluations to assess the stability, performance and scalability of implemented controllers.
- Designed a hierarchical regulation framework for processor power capping that ensures energy budget compliance across variable system dimensions and hardware configurations.

September 2023 | **Master's and Engineering Degree, ENP**
National Polytechnic School, Algiers, Algeria. Specialization in Automatic Control.

- Advanced Control Systems
- Optimization and Optimal Control
- Industrial Process Control

- Signal Processing
- Industrial Computing
- Programming (C, C++, Python)
- Instrumentation
- Process Identification
- Multivariable Control (State-space/Frequency domain)
- Power Electronics
- Robotics
- Programmable Logic Controllers (PLC)
- Control Systems Technology
- Discrete Event Systems

September 2018 | **High School Diploma in Mathematics and Physics, with Honors**
Fatima Zahra High School, Sétif, Algeria

Teaching

June 2026
September 2024 | **Discrete-Time Control Systems, Lab Sessions - 18 hours**
- Developed comprehensive lab curricula and source code for a digital motion control lab, integrating micro-controllers with real-time data processing.
- Mentored diverse student groups (15-20) by applying theoretical control concepts to real-world experimental scenarios.
- Collaborated proactively with the teaching team to improve educational materials.

June 2026
September 2024 | **Continuous-Time Control Systems, Lab Sessions - 59 hours**
- Contributed to the drafting and updating of laboratory workbooks.
- Created digital supporting resources on MATLAB/Simulink to facilitate the adoption of calculation and simulation tools.
- Commissioned, tested, and configured specific testbeds (PID Controllers and Rotating Machines) and experimental rigs (DC motors, sensors).
- Led the full control design process : modeling, experimental identification, and PID synthesis to meet performance criteria.

April 2026 | **Software Engineering Project, Project Tutor - 5.5 hours**
- Supervised student teams in the full-cycle development of strategy game software.
- Mentored groups on Agile methodologies : task planning, workload distribution, and conflict resolution.
- Provided technical oversight on the implementation of Minimax algorithms and heuristic optimization.
- Guided the design and validation of Graphical User Interfaces (GUI) using user-centered testing.
- Evaluated technical deliverables, including code quality, architectural robustness, and documentation.
- Acted as a member of the final defense jury to assess project outcomes and technical presentations.

Supervision

2026 | **Doaa Elnoamany :** "*Control of uncertain MIMO systems with probabilistic constraints...*"
Master of Science (M.Sc.) MiSCIT, Université Grenoble Alpes, Grenoble, France.
Co-encadrement : Bogdan Robu and Sophie Cerf

2025 | **Mohamed Abdeljalil Maziz :** "*LPV control for dynamic power capping in High-Performance Computing (HPC) under mixed workloads*"
Master of Science (M.Sc.) MiSCIT, Université Grenoble Alpes, Grenoble, France.
Co-encadrement : Bogdan Robu and Sophie Cerf

2025 | **Mahmoud Abdo :** "*Model Predictive Control (MPC) approach for resource scavenging in High-Performance Computing (HPC)*"
Master of Science (M.Sc.) MiSCIT, Université Grenoble Alpes, Grenoble, France.
Co-encadrement : Bogdan Robu and Sophie Cerf

2024 | **Jawad Hasnain :** "*Extremum Seeking Control (ESC) for first-order systems with various objective functions*" Master's (M1) in Electrical Engineering and Control Systems, Université Grenoble Alpes, Grenoble, France.
Co-encadrement : Bogdan Robu

Publications

International Conferences

[C1] **K. Halitim**, T. Collignon, S. Cerf, B. Robu, E. Rutten, R. Bleuse, *"Event-Triggered Adaptive PI Control for Mitigating Congestion in Shared Storage Systems"*, in ECC 2026 - European Control Conference, Reykjavik, Iceland, 2026. (Accepted).

[C2] **K. Halitim**, S. Cerf, B. Robu, and É. Rutten, *"Robust Cascade Control for Variable Dimension Systems - Application to processors' power capping"*, in ECC 2025 - European Control Conference, Thessaloniki, Greece, 2025. Available : `https://hal.science/hal-05117585v1`

[C3] **K. Halitim**, B. Robu, S. Cerf, R. Bleuse, E. Rutten, *"Stochastic Model Predictive Control with Direct Feedforward Compensation"*, in ICSTCC 2025 - 29th International Conference on System Theory, Control and Computing, Cluj-Napoca, Romania, 2025. Available : `https://hal.science/hal-05210549v1`

[C4] T. Collignon, **K. Halitim**, R. Bleuse, S. Cerf, B. Robu, É. Rutten, L. Seinturier, and A. van Kempen, *"Mitigating Shared Storage Congestion Using Control Theory"*, in UCC 2025 - IEEE/ACM International Conference on Utility and Cloud Computing, Nantes, France, Dec. 2025. Available : `https://cnrs.hal.science/LIG/hal-05368563v1`

National Conferences

[N1] T. Collignon, **K. Halitim**, R. Bleuse, S. Cerf, B. Robu, É. Rutten, L. Seinturier, and A. van Kempen, *"Coarse-grain Congestion Regulation Using Control Theory"*, in COMPAS 2025 - Conférence en Parallélisme, Architecture et Système, Bordeaux, France, 2025. Available : `https://hal.science/hal-05075480v1`

Theses

[T1] **Kouds Halitim**. *"Enhancing Efficiency through Control Theory in Compute-Intensive Applications,"* Master's Thesis, 2023. Available : `https://inria.hal.science/hal-04357812`

Posters

[P1] T. Collignon, **K. Halitim**, R. Bleuse, S. Cerf, B. Robu, É. Rutten, L. Seinturier, and A. van Kempen, *"Temperature control of computing sites through the injection of useful and non-invasive tasks"*, Greendays 2026, March 2026, Sophia, France. Available : `https://inria.hal.science/hal-05551250v1`

[P2] **Kouds Halitim**. *"Task hybridization in heterogeneous computing : a combination of control and scheduling theories"*, "PAD Days" GIPSA, December 2025, GRENOBLE (38000), France.

[P3] **Kouds Halitim**. *"Task hybridization in heterogeneous computing : a combination of control and scheduling theories"*, "PhD Madness" LIG, May 2025, GRENOBLE (38000), France. Available : `https://inria.hal.science/hal-05108245v1`

Scientific Responsibilities

2025 | Reviewer for the European Control Conference (ECC 2025) and the International Conference on Utility and Cloud Computing (UCC 2025)

2025 | Session Chair for the "Control Applications" session at the European Control Conference (ECC 2025)

2026 | Session Chair for the " Heterogeneous and reconfigurable architectures for the future of computing : Project Talks" session at the 18^{th} JLESC workshop

Languages

French : Fluent

English : Fluent

Arabic : Native

German : Beginner