

Edge Intelligence

<http://edge-intelligence.imag.fr>

Chair: Denis Trystram, professor Grenoble INP, UGA

Steering Committee: Thierry Coupaye, Frédéric Desprez and Thang Nguyen

Frugal and sober AI and digital technologies



Digital technologies grow everywhere

- ✗ The energy demand to power digital technologies increases 6-9% per year
- ✗ Digital technologies contribution to GHG emissions increases drastically

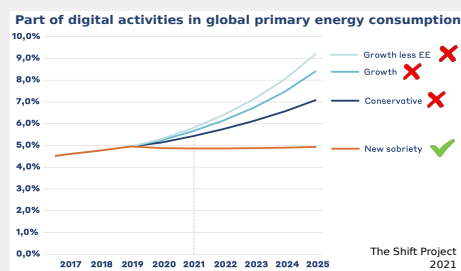


Objective

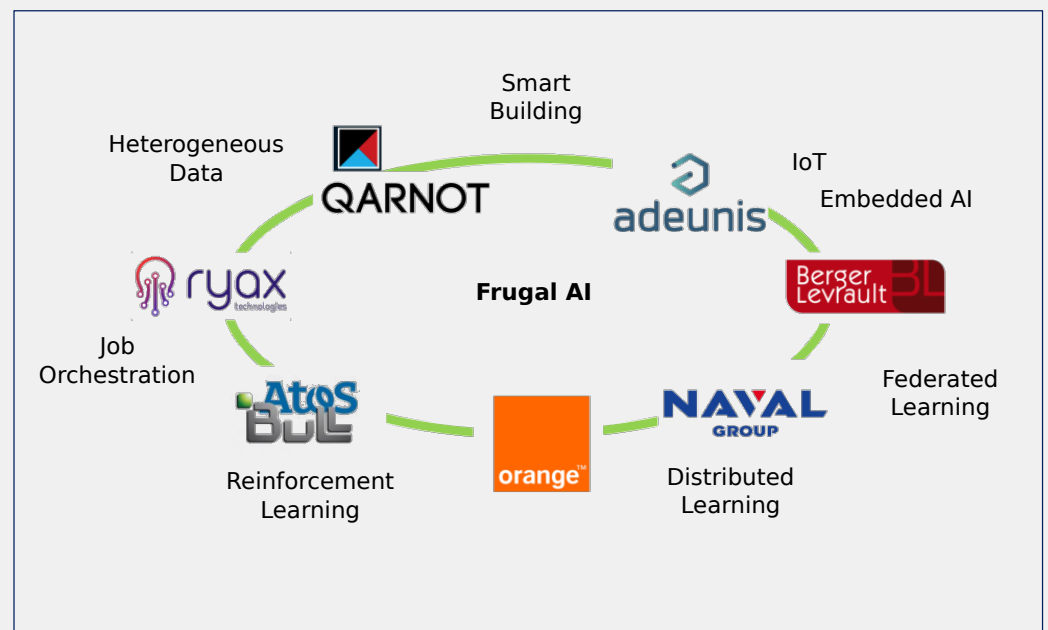
Towards digital sobriety by low-complex distributed and frugal methods for embedded AI technologies

How we contribute

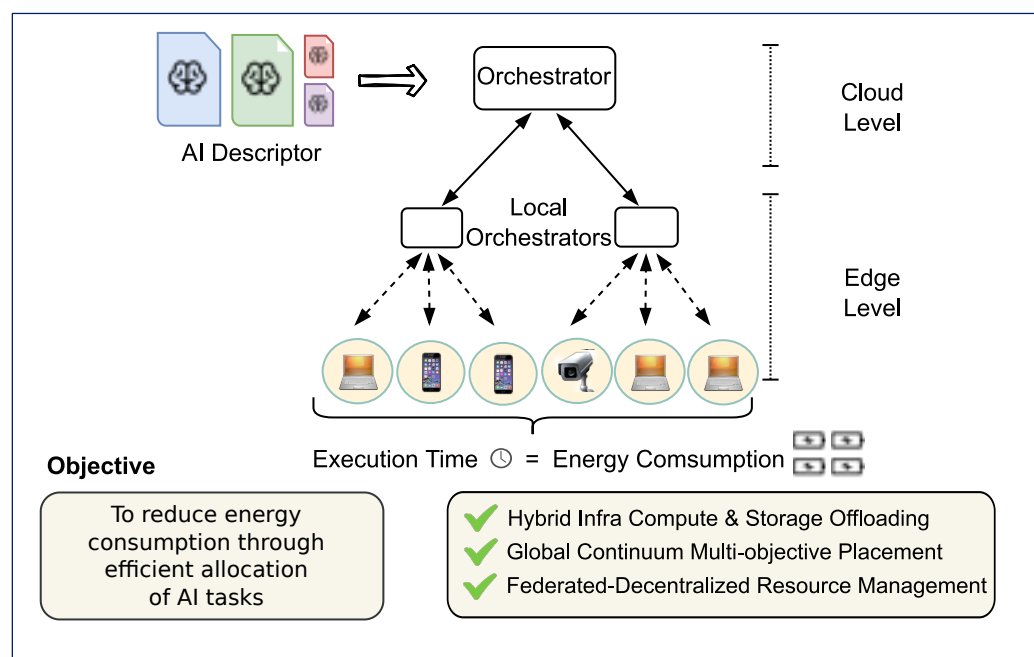
- ✓ Distributed and Federated Learning
- ✓ Orchestration of AI processing
- ✓ Multi-objective metrics for AI
- ✓ Resilience and convivial machine learning



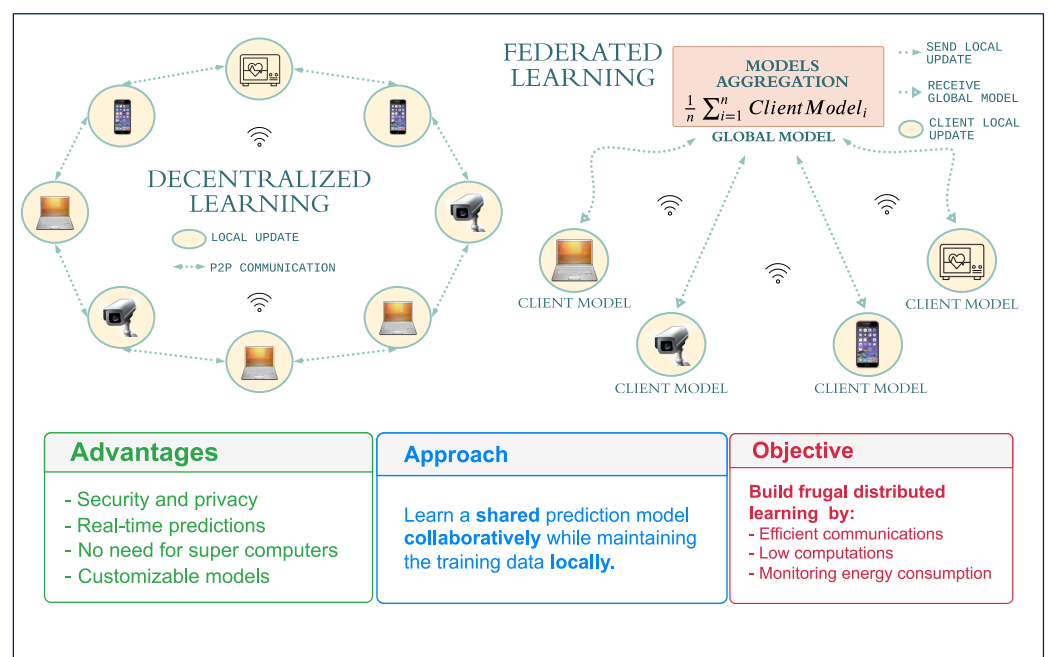
Industrial Partners



Orchestration of AI processing



Distributed Learning



Collaborations

International Collaborations

Ian Foster, Argonne Nat. Lab., USA
Anne-Marie Kermarrec EPFL, Switzerland
Benjamin Moseley, Carnegie Mellon University, USA

National Collaborations

Christophe Cérin, LIPN, Paris 13
Laurent Lefèvre, ENS Lyon, AVALON-Inria
Romain Couillet, MIAI LargeDATA Chair



Selected Publications

- ✓ Online Non-preemptive Scheduling on Unrelated Machines with Rejections.
Giorgio Lucarelli, Benjamin Moseley, Kim Thang Nguyen, Abhinav Srivastav, Denis Trystram
ACM Trans. Parallel Comput. 8(2): 9:1-9:22 (2021)
- ✓ Short-Term Ambient Temperature Forecasting for Smart Heaters.
Danilo Carastan-Santos, Anderson Andrei Da Silva, Alfredo Goldman, Angan Mitra, Yanik Ngoko, Clément Mommessin, Denis Trystram
ISCC 2021: 1-6
- ✓ Evaluating Computation and Data Placements in Edge Infrastructures through a Common Simulator.
Anderson Andrei Da Silva, Clément Mommessin, Pierre Neyron, Denis Trystram, Adwait Bauskar, Adrien Lebre, Alexandre van Kempen, Yanik Ngoko, Yoann Ricordel
SBAC-PAD 2020: 67-74
- ✓ Improving the Performance of Batch Schedulers Using Online Job Runtime Classification
Salah Zrigui, Raphael Y. de Camargo, Amaud Legrand, and Denis Trystram
IEEE TPDS, to appear
- ✓ A Federated Learning Framework for IoT: Application to Industry 4.0
Jean-Luc Borsalino, Frédéric Desprez, Mohamed Kandi, Youssef Miloudi, Hamza Safri, Denis Trystram
CCgrid, Sicilia, May 2022