Olivier Juan

Research Engineer Expert

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Experience

Jan 2008 – present **EDF R&D · OSIRIS, Palaiseau, France**

- Led the ground-up redesign and production deployment of **Apogène**, EDF's short-term unit commitment software (MILP, branch-and-bound, ADMM, RCSPP, Min Cost Flow). 4 versions deployed in production (V2 2018, V3 2020, V4 2021, V5 2025), saving several tens of millions of euros per major release.
- Managed a team of 10–20 engineers and researchers across the full lifecycle: mathematical modeling, algorithm design, C++ implementation, CI/CD (GitLab), HPC deployment (Slurm, Singularity).
- Integrated ML-based branching heuristics (RL, GNN) into the solver loop; results published at NeurIPS 2025 and AAAI 2026.
- Designed and built the optimization platform for DREEV (EDF × Nuvve joint venture): EV fleet dispatch across NEBEF, Spot, Intraday, and FCR markets (MILP, Lagrangian decomposition). DREEV became first French EV aggregator accredited for FCR by RTE (2022). Ongoing research on Frank-Wolfe decomposition methods as a replacement for Lagrangian decomposition in legacy algorithms.
- Earlier work (2008–2012): task scheduling for maintenance planning, LNG terminal planning & scheduling, combustion and emission optimization for coal power plants.

Jan 2007 – Jan 2008 **École Centrale de Paris, France**

- Combinatorial algorithms for medical imaging, with Nikos Paragios.

Jan 2006 – Jan 2007 **University of Western Ontario, Canada**

- Graph cuts and combinatorial algorithms for computer vision, with Yuri Boykov.

Education

Jan 2006 **École Nationale des Ponts et Chaussées (ENPC), France**, Computer Vision

- Distinction. Dissertation: *On Some Extensions of Level Sets and Graph Cuts & Their Applications to Image and Video Segmentation*

Jan 2002 **ENS Paris-Saclay (formerly ENS de Cachan), France**, Computer Vision

Awards

Jan 2022 **IndusRO'2022 Prize**

Awarded for the industrial impact of Apogène on EDF's power plant operations. ROADEF (French Society for Operations Research and Decision Aid)

Teaching

2023, 2024 **From Long-term to Short-term Unit Commitment at EDF**

Co-architect and lecturer (courses + practical sessions) for a 5-day master-level intensive program on electricity system planning. Module covers unit commitment optimization across all EDF horizons (weekly, daily, intraday), from MILP modeling to production deployment.

Jan 2020 **Game Theory Applied to Electricity System Problems**

Guest lecture on game-theoretic models for electricity markets and smart grid problems, within the master-level course on game theory for smart cities.

Supervision

Jan 2023 **Paul Strang — CIFRE PhD**

Co-supervision of a CIFRE industrial PhD on reinforcement learning and model-based planning for branching strategies in branch-and-bound solvers (BBMDP @ NeurIPS 2025, PlanB&B @ AAAI 2026). Expected graduation: 2026.

Jan 2018 **Marc Etheve — CIFRE PhD**

Co-supervision of a CIFRE industrial PhD on reinforcement learning for variable selection in branch-and-bound (FMSTS @ CPAIOR 2020). Graduated 2021.

Talks

Oct 2024 **Apprentissage par renforcement pour l'apprentissage de stratégies de branchement**

Invited talk on reinforcement learning for branching strategy optimization in branch-and-bound solvers, based on joint work with CNAM and ISAE-SUPAERO at EDF R&D.

Apr 2021 **EV Flexibility for the Electric System: The FCR Case**

Invited talk on smart EV charging optimization and participation of EV fleets in the Frequency Containment Reserve (FCR) market, in the context of the DREEV joint venture (EDF × Nuvve).
olivierjuan.github.io/assets/pdf/IRT_systemX_EV_flexibility_for_electric_system.pdf

Recent Publications

Jan 2026 **PlanB&B: Planning in Branch-and-Bound via Model-Based RL**

Strang, Alès, Bissuel, Juan, Kedad-Sidhoum, Rachelson.
Paul Strang, Zacharie Alès, Côme Bissuel, Olivier Juan, Safia Kedad-Sidhoum, Emmanuel Rachelson
arxiv.org/abs/2511.09219

Jan 2025 **BBMDP: A Markov Decision Process for Variable Selection in B&B**

Strang, Alès, Bissuel, Juan, Kedad-Sidhoum, Rachelson.
Paul Strang, Zacharie Alès, Côme Bissuel, Olivier Juan, Safia Kedad-Sidhoum, Emmanuel Rachelson
arxiv.org/abs/2510.19348

Jan 2020 **Reinforcement Learning for Variable Selection in a Branch and Bound Algorithm**

Etheve, Alès, Bissuel, Juan, Kedad-Sidhoum.
Marc Etheve, Zacharie Alès, Côme Bissuel, Olivier Juan, Safia Kedad-Sidhoum
doi.org/10.1007/978-3-030-58942-4_12

Skills

Optimization: MILP, Branch-and-bound, Cutting planes, RCSPP, ADMM, Min Cost Flow, Constraint programming, Decomposition methods, Heuristics, Genetic Algorithm, Bundle methods, Frank-Wolfe decomposition

Solvers: CPLEX, GUROBI, SCIP, FICO Xpress, COIN-OR, HiGHS, Interior Point Methods

Machine Learning: Reinforcement learning, Graph Neural Networks, ML for combinatorial optimization

Frameworks: PyTorch, PyG, RLLib, Ray

Programming Languages: C++, Python, Julia

Spoken Languages: French (native), English (fluent)

Engineering: GitLab CI/CD, Docker, TBB, HPC / Slurm, Singularity, CMake, Conan