

Education

- 2021–2022 **University of California Berkeley**, Berkeley CA, USA
Master of Science in Industrial Engineering and Operations Research. Relevant coursework : *Statistics, Computer Science (Deep Learning, Natural Language Processing, Reinforcement Learning...) and Applied Mathematics (Optimization, Stochastic Processes, Linear Programming...)*. GPA: 3.96/4
- 2018–2021 **École Centrale Paris (CentraleSupélec)**, Gif-sur-Yvette, France
Master of Science. One of France's leading university for sciences and engineering. Relevant coursework: *Mathematics, Optimization, Statistics, Computer Science and Data Science*. Ranked in the top 2 % of the class. GPA: 4.33/4.33.
- 2016–2018 **Lycée Sainte-Geneviève**, Preparatory program, Versailles, France
Intensive two-year preparation program. *Maths, Physics and Computer Science* track. GPA: 3.96/4.

Work Experience

- February 2022 - Present **Graduate Student Researcher**, *AutoLab - Berkeley AI Research Lab (BAIR)*, Berkeley, CA
- o Built Monte-Carlo Q-value estimation for offline learning on top of 6 reinforcement learning algorithms (CQL, AWAC...).
 - o Achieved convergence on 5 different environments, including when state-of-the-art baselines did not converge.
 - o Improved convergence speed by almost 50% on different settings using our parameter-free approach.
- February 2021 - July 2021 **Machine Learning Research Intern**, *Tribvn-Healthcare*, Paris, France, Supervised by R. Fick, PhD
- o Developed deep learning models for cancer diagnosis and detection in whole slide anatomopathology images.
 - o Used advanced data-augmentation, FasterRCNN and residual cycle GANs to make deep learning algorithms agnostic to complex datasets characteristics, in order to increase generability of the predictions on unseen scanners.
 - o Performed 3rd (out of 214) on *Midog Mitosis Detection Challenge*, with an F1-score of 75% on real medical data.
- August 2020 - February 2021 **Machine Learning Research Intern**, *Therapanacea*, Paris, France
- o Built deep-learning models for dose prediction in radiotherapy, developing 3D image-to-image translation methods to predict treatment plans from contoured scanner images using U-Net and GANs based architectures.
 - o Used rotationally invariant convolutional neural networks to learn complex beam rotation patterns.
 - o Achieved SOTA performances for several types of cancers with less than 5% difference compared to physicians' plans.

Publications

1. Monte Carlo Augmented Actor-Critic for Sparse Reward Deep Reinforcement Learning from Suboptimal Demonstrations. *NeurIPS 2022*. Albert Wilcox, Ashwin Balakrishna, **Jules Dedieu**, Daniel Brown, Wyame Benslimane, Ken Goldberg
2. Robust Mitosis Detection Using a Cascade Mask-RCNN Approach With Domain-Specific Residual Cycle-GAN Data Augmentation. *Springer LNCS, 2021*. **Jules Dedieu**, Gauthier Roy, Capucine Bertrand, Alireza Moshayedi, Ali Mammadov, Stéphanie Petit, Saima Ben Hadj, Rutger H.J. Fick.
3. End-to-End VMAT Pelvis Dose Prediction & Treatment Planning Inference *ESTRO, 2020*. **Jules Dedieu**, Kumar Shreshtha, Aurelien Lombard, Norbert Bus, Sonia Martinot, Rutger Fick, Nikos Paragios

Projects

- 2021–2022 **Deep Reinforcement Learning Project**, *Berkeley EECS*
- o Led a research project and developed reinforcement learning actor-critic and value-based methods, relying only on estimating differences of value function between observed states.
 - o Reached similar performance to widely used methods on several simple OpenAI Gym/Mujoco environments.
- 2019–2020 **Applied Mathematics Project**, *Servier Laboratories*, Supervised by Professor Cournède
- o Estimated the best parameters of a pharmacological mixed model simulating the action of a diabetes drug.
 - o Solved complex statistical inference with limited observability in partial differential equations.
- 2018–2019 **Data Science Project**, *Institut Gustave Roussy*, Supervised by Professor Letort
- o Built ML algorithms to predict the risk of developing a cancer induced by radiotherapy. Reached an 88% accuracy.
 - o Performed feature-selection from a high-dimensional dataset benchmarking different interpretable methods.
- 2018 **Bioinformatics Project**, *Electricité De France*
- o Developed an algorithm to simulate the growth of biofilm in the heat exchangers of nuclear power plants.
 - o Selected the optimal operational conditions regarding safety, efficiency and environmental constraints.
 - o Led a team of 5 people and improved the cost-efficiency by 10% over the baseline.

Skills

- Computing **PYTHON** (*Pytorch, Tensorflow, Pandas, scikit-learn*), **SQL**, **MONGODB**, **UNIX SYSTEMS**, **R**, **MATLAB**, **AWS**
- Languages **French**: native. **English**: fluent, TOEFL score: 107. **Spanish**: fluent. **Japanese**: intermediate.

Personal interests

- Sports Tennis (9 years, competitive), judo (10 years, competitive), half marathon running, hiking.

Volunteering Organized a sustainable-development oriented fair gathering 50 companies in 2021, in charge of partnerships.