Jules Dedieu

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Work Experience

2022 (4 months) **Graduate Student Researcher**, *AutoLab - Berkeley AI Research Lab (BAIR)*, Berkeley, CA, Supervised by Professor Goldberg
- Built Monte-Carlo Q-value estimation for offline learning on top of common algorithms (CQL, AWAC...)
- Achieved convergence on 5 different environments, including when baseline did not converge.
- Paper submitted to *Neurips* 2022 (third author).

2021 (4 months) **Machine Learning Research Intern**, *Tribvn-Healthcare*, Paris, France, Supervised by R. Fick, PhD
- Developed deep learning models for cancer diagnosis and detection in whole slide anatomopathology images.
- Used advanced data-augmentation and residual cycle GANs to make deep learning algorithms agnostic to complex datasets characteristics, in order to increase generability of the predictions on unseen datasets.
- Performed 3rd (out of 214) on *Midog Mitosis Detection Challenge*, using FasterRCNN and residual cycle GANs.
- Paper to appear in *Springer LNCS* (co-first author).

2020 - 2021 (6 months) **Machine Learning Research Intern**, *Therapanacea*, Paris, France
- 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.
- Achieved state-of-the-art performances for several types of cancers and treatments.
- Used rotationally invariant convolutional neural networks to learn complex beam rotation patterns.
- Paper to appear in *ESTRO 2022* (first author).

Education

2021–2022 **University of California Berkeley**, Berkeley CA, USA
Master of Science in Industrial Engineering and Operations Research. Main coursework includes: Statistics, Computer Science (Deep Learning, Natural Language Processing, Reinforcement Learning...) and Applied Mathematics (Optimization, Stochastic Processes, Linear Programming...). GPA: 3.94/4

2018–2021 **École Centrale Paris (CentraleSupelec)**, Gif-sur-Yvette, France
Master of Science. One of France's leading university for sciences and engineering. Main coursework includes: *Mathematics (Applied Mathematics, Probabilities, Integration, Stochastic Processes, Optimization), Computer Science (Machine Learning, Deep Learning, Algorithmics, Big Data), Bio-Informatics and Mathematical Finance*.
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 leading to the highly competitive entrance exams to the Grandes Ecoles for scientific studies. *Maths, Physics and Computer Science* track. GPA: 3.96/4.

Projects

2021–Present **Deep Reinforcement Learning Project**, *Berkeley EECS - CS 285*
- Developing reinforcement learning actor-critic and value-based methods, relying only on estimating differences of value function between observed states.
- 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
- Estimated the best parameters of a pharmacological mixed model simulating the action of a diabetes drug.
- Solved complex statistical inference with limited observability in partial differential equations.

2018–2019 **Data Science project**, *Institut Gustave Roussy*, Supervised by Professor Letort
- Built interpretable machine learning algorithms to predict the risk of developing a second cancer induced by radiotherapy for young cancer patients. Reached an 88% accuracy.
- Selected the most relevant features from a high-dimensional dataset using a sparse regularization.

2019 **Mathematical Finance research project**, *Centrale Paris - Math and Computer Science Laboratory*
- Trained several state-of-the-art auto-regressive and agent-based models to predict intraday liquidity in stock markets.

2018 **Bioinformatics project**, *Electricité De France*
- Developed an algorithm to simulate the growth of biofilm in the heat exchangers of nuclear power plants.
- Selected the optimal operational conditions regarding safety, efficiency and environmental constraints.
- Increased the cost-efficiency by 10% over the baseline.

Skills

Computing: Python *(Pytorch, Tensorflow, Keras, Numpy, Pandas, scikit-learn)*, R, Matlab, SQL, OCaml

Languages: **French**: native. **English**: fluent, TOEFL score: 107. **Spanish**: fluent. **Japanese**: intermediate.

Personal interests

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

Campus life: Organizing a sustainable-development oriented fair, in charge of corporate partnerships.
Member of CentraleSupelec Arts Society: in charge of *Comédie Francaise* partnership.