Jules Dedieu

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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 (CentraleSupelec)**, 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
- Built Monte-Carlo Q-value estimation for offline learning on top of 6 reinforcement learning algorithms (CQL, AWAC...).
- Achieved convergence on 5 different environments, including when state-of-the-art baselines did not converge.
- 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
- Developed deep learning models for cancer diagnosis and detection in whole slide anatomopathology images.
- 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.
- 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
- 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.
- Used rotationally invariant convolutional neural networks to learn complex beam rotation patterns.
- 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.
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*
- 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.
- Reached similar performance to widely used methods on several simple OpenAI Gym/Mujoco environments.

2019–2020 **Applied MathematicsPproject**, *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 ML algorithms to predict the risk of developing a cancer induced by radiotherapy. Reached an 88% accuracy.
- Performed feature-selection from a high-dimensional dataset benchmarking different interpretable methods.

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.
- 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.