Laure DELISLE

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https://scholar.google.com/citations?user=fCw7_7cAAAAJ

Autonomous, driven and fast-learning Research Engineer with two Master's degrees and professional experience in AI startups. Her research interests revolve around **scarce labeled data regimes**. Currently **applying for PhD** and building ImpactNet (AI Commons).

Education

2016-2017 **Master of Data Science** – Illinois Institute of Technology, Chicago, USA (GPA: 3.55)
2015-2017 **MSc in CS & Engineering** – ESIEA, Paris, France (GPA: 3.87 - **top overall student**)
2012-2015 **Bachelor in CS & Engineering** – ESIEA, Paris, France (GPA: 4.0 - top 3rd, 2nd, 1st year student and **top overall student**)
2010-2012 **Medical School preparatory cycle** – Descartes University, Paris, France (highly competitive, high intensity, undergrad)

Coursework

Mathematics courses– Linear Algebra, Differential Calculus, Descriptive Statistics, Applied Statistics, Probabilities, Real Analysis, Series and Approximation, Statistical Learning, Mathematical Modeling, Fourier Analysis, Formal Logic, Stochastic Processes.
Computer Science courses – C programming, Data Structures, Design and Analysis of Algorithms, Object-Oriented programming, Java programming, Networks, Operating Systems, Web programming, Databases, Introduction to Computer Security, Advanced Computer Security, Machine Learning, Data Preparation and Analysis, Big Data Technologies.

Skills

Technical

Languages and packages – Python (5 years), PyTorch (1 year), sklearn, numpy, pandas, ggplot2, matplotlib, C, Java, Prolog, bash.
Machine Learning – Deep Learning (ConvNets), Unsupervised learning (Clustering), hyperparameter search, importance sampling.
Tools, Misc. – LaTeX, Git, PR/code reviews, Vim, Mathematica, HTML/CSS/Javascript, SQL, Docker, ssh.
Languages – English (TOEFL 119/120), French (native), Italian (beginner).

Presenting

Research posters – NeurIPS workshop (AI for social good, 2018), ICLR workshop (Reproducibility in Machine Learning, 2019).
Professional – Internship presentations ~100 person audience, regular end-of-iteration client presentations, use-case audits

Collaboration

Collaborators – Collaborating with co-authors (research ideation / implementation / writing), with senior professors e.g. *Prof David Duvenaud*, international distributed teams *(*pair-programming, research ideation, reading group, technical report writing).
Partner orgs – *Amnesty International* (Human Rights NGO, 1.5 year), *MILA* (University lab, research ideation sessions), *Satellite Catapult* (Remote Sensing experts, 6 months), *Hope Not Hate* (Civil Rights research organization, 3-day data dive).

Research

Research Interests

Scarce-Labelled-Data Regime: meta-learning, few-shot learning, semi-supervised learning, learning with noisy labels.
Computer Vision: object detection, image segmentation, image classification.
Applications: AI for social good, UN Sustainable Development Goals (SDGs), defense of human rights, cybersecurity.

Publications – * denotes equal contribution

Boquet, T*, **Delisle, L***, Kochetkov, D, Schucher, N, Atighehchian, P, Oreshkin, B and Cornebise, J, 2019. ***DECoVaC: Design of Experiments with Controlled Variability Components*** [under review].

Boquet, T*, **Delisle, L***, Kochetkov, D, Schucher, N and Cornebise, J, 2019. ***Reproducibility and Stability Analysis in Metric-Based Few-Shot Learning***. In International Conference on Learning Representations (ICLR), 2019 Workshop on Reproducibility in Machine Learning.

Delisle, L*, Kalaitzis, A*, Majewski, K, de Berker, A, Marin, M and Cornebise J, 2018. ***A large-scale crowdsourced analysis of abuse against women journalists and politicians on Twitter***. In Neural Information Processing Systems (NeurIPS), 2018 Workshop on AI for Social Good.

Projects

Decode Darfur – Detecting human presence in Darfur using noisy crowd-sourced labels and free low resolution satellite images. Sub-pixel information image classification, using multiple low res images of given location fused as embeddings.
Troll Patrol – Quantifying online verbal abuse against women using crowd-sourced labels. Importance sampling rare class dataset enrichment, post importance sampling re-weighting for quantitative analysis (collaboration with Prof D. Duvenaud).
Few-shot learning – Reproducibility and stability analysis of Prototypical Networks (Snell et. al., 2017). Quantifying the variability

in the error linked to the random seed and the repeat, ensuring deterministic behavior for given random seed.
Vehicle detection POC – Detecting moving vehicle on satellite video. Pixel registration stabilization, detection using optical flow.

Teaching

MSc students

Introduction to Machine Learning for Cybersecurity – Theory and practical, 20 MSc students in Advanced Cybersecurity , 8 hours.
Neural Networks for Intrusion Detection – Prototyping (sparse AE + MLP, KDD-Cup99 dataset). 30 MSc students in CS, 2h.

Bachelor students

Formal Logic – Exam prep on sequent calculus (theory, practice), 80 students of my own class. **Passing rate rose from 7% to 50+%**.

Professional engineers

Hyperparameter Search – Trained my team (7 engineers) on hyperparameter search, acted as go-to person on that matter.

Work

Research Engineer – **Element AI** *Feb 2018-Oct 2019*
Tackling Human Rights violations using AI *(see also the **Research - Projects** section)* *England*
Built the AI for Good team as 1st research engineer with Dr Julien Cornebise. Decode Darfur (main research engineer) and Troll Patrol (project lead) projects with Amnesty International. Research on few-shot learning algorithms (RML@ICLR 19). Customer audit workshop with Amnesty international leading to a white paper (Ryan, M. and VanAntwerp, S. 2019. ***AI-Enabled Human Rights monitoring***).
✓ *Classification – Computer Vision – Deep Learning – Few-Shot Learning – PyTorch – Scikit-learn – Pandas*

Data Science Intern – **Lastline Inc** *Oct-Dec 2017*
Cluster consistency evaluation *United States*
Gained understanding about malware detection and file clustering, established the project scope. Identified relevant data sources, aggregated data from multiple sources: MySQL databases, Cassandra keyspaces. Performed data cleaning and feature extraction, computed consistency metrics, created dataviz.
✓ *Data wrangling – Data cleaning – Dataviz – Python*

Data Science Extern – **Uptake** *June-July 2017*
Anomaly detection in a water treatment plant *United States*
Combined sensors/actuators data (52 features, 900k samples) with network logs (semi-structured, ~50M samples) from the SWaT Industrial plant cyber-attack dataset. Conducted data analysis and classification benchmark, selected Gradient Boosting, tuned stratified sampling window length using F1 score.
✓ *Classification – Python – Scikit-learn – Pandas – GGplot2*

R&D Intern – **Atomic Energy Commission (CEA)** *Apr-July 2016*
Conception of a scalable stateful network scanner *France*
Benchmarked event programming libraries: libevent, libev, libuv. Designed the software macro architecture. Implemented a proof of concept combining asynchronous and event programming. Advocated the project to 60+ colleagues, managers and heads of department.
✓ *Event programming - Parallel computing architecture - Port scanning - C*

R&D Intern – **Airbus Defence & Space** *June-Aug 2015*
Anomaly detection on network logs *France*
Designed and developed a tool detecting stealth signals from network metadata. Engineered a cold start system able to work with no labels nor IDS signatures. Presented results to 100+ colleagues and managers.
✓ *Clustering algorithms - Python - Network protocols – ElasticSearch*

Sysadmin Intern – **Exa Networks** *July-Aug 2013*
Automation of server configuration for an ISP *England*
Migrated Bash server configuration scripts to Ansible playbooks. Automated script customization with regular expressions. Transferred knowledge gained about Ansible to the tech team.
✓ *Python – Bash – Ansible*

Personal Interests

STEM outreach – **Hacking event NDH Kids**, Founder, General Chair (2014, 2015), Advisory Board (2016)
Created the first non-for-profit free STEM+Hacking event for children in France (50 attendees, 6 workshops, $2000 budget). Championed diversity and inclusion efforts (gender parity, socio-economic diversity, accessible for children with disabilities) through school outreach, social media advertisement, venue and workshop adaptation. Managed 20 volunteers.

Hobbies and interests – Rock climbing (indoor top-roping), hiking, foosball, Rubik's cube, Cubism, cheese, gelato.