Alice Schoenauer Sebag, PhD

Paris, France

alice.schoenauer@polytechnique.org

Webpage - *GitHub*

Work Experience

French Ministry for the Economy and Finance, General Inspection of Finance (*Inspection générale des finances*), Paris, France *Chief data scientist* *Feb. 2019 - present*

- Started and developed the data science practice for public policy evaluation and strategic decision making: defined the goals and designed processes for technical, scientific, legal and HR matters
- Managed a technical team of 4 people, that contributed to 20 projects
- Completed 6 machine learning projects (e.g. unsupervised ML applied to Education data, NLP for topic modeling in citizen contributions - *link to results*)
- Taught; participated to Ministry seminars ; co-created a data scientist network within the ministry
- More info (in French): *press article* and *video* of a debate about data-driven public policy evaluation.

UCSF, Pharmaceutical Chemistry dpt., San Francisco, USA *Post-doctoral scholar Sep. 2016 - Oct. 2018*

- Developed a novel method for deep multi-domain learning for image-based drug screens (*ICLR'19*)
- Developed a novel adaptive optimization algorithm for deep learning (*link*)
- Designed and implemented a library of visualization tools for biologists (Python)
- Supervised 2 research internships

Shift technology, Paris, France *Research scientist* *Sep. 2015 - August 2016*

- Seconded the CSO in building the product for Health insurance fraud detection
- Developed machine learning-based algorithms for automated data processing and insurance fraud detection, and implemented the corresponding libraries for data scientists (C♯)
- Supervised 2 research internships (multivariate extremal analysis and anomalous time series detection)

European Commission, DG Health and Food Safety, Brussels, Belgium *Consultant* *April - July 2012*

- Analyzed the trade-off between the protection of business secrets and openness in decision-making process, in the scope of R(EC) N^o 1331/2008

Education

Deep learning summer school, Montréal, Canada *2017*

Mines ParisTech - Center for Computational Biology, Paris, France *Graduated 2015*

PhD in Bioinformatics: *The versatility of high-content high-throughput time-lapse screening data*
Advisors: Jean-Philippe Vert, PhD and Pr. Robert Barouki
Courses: Machine Learning Summer School, Max-Planck Institute, (Tübingen, Germany)
Graphical methods and Kernel methods (MS MVA, ENS Cachan)

Paris Sorbonne University Law school, Paris, France *Graduated 2012*

LLM in *Food and health safety law*, class rank: 1/13

Ecole Polytechnique, Palaiseau, France *Graduated 2011*

Diploma of the Ecole Polytechnique (Rate of admission: 12%)

- Class rank: 59/500
- 14 graduate-level courses in Computer Science, Advanced Mathematics and Biology
- Specialization: MSc *Toxicology, Environment, Health*
- *Outstanding leadership* award

Skills

Programming skills Python, PyTorch, Lua, Torch, C♯, SQL, Django, PHP, Doctrine, HTML, CSS, experience with Java, R, Matlab
Natural Languages French (mother tongue), English (fluent, TOEFL: 116/120), German, Italian

Publications

1. A. Schoenauer Sebag, L. Heinrich, M. Schoenauer, M. Sebag, L. Wu, S. Altschuler: **Multi-domain adversarial learning** *International Conference on Learning Representations* (ICLR 2019). *https://openreview.net/forum?id=Sklv5iRqYX*
2. A. Schoenauer Sebag, M. Schoenauer, M. Sebag: **Stochastic Gradient Descent: Going As Fast As Possible But Not Faster** *CoRR* abs/1709.01427 (2017). *https://arxiv.org/abs/1709.01427*
3. A. Schoenauer Sebag: **The versatility of high-content high-throughput time-lapse screening data: developing generic methods for data re-use and comparative analyses.** PhD thesis, Mines ParisTech (2015). *https://bit.ly/3itz3Se*
4. A. Schoenauer Sebag, S. Plancade, C. Raulet-Tomkiewicz, R. Barouki, J.-P. Vert and T. Walter: **A generic methodological framework for studying single cell motility in high-throughput time-lapse data.** *Bioinformatics*, 31(12):i320-i328 (2015). *https://bit.ly/3ketCY6*
5. A. Schoenauer Sebag, S. Plancade, C. Raulet-Tomkiewicz, R. Barouki, J.-P. Vert and T. Walter: **Infering an ontology of single cell motions from high-throughput microscopy data.** *Proceedings of the 12th IEEE international symposium on biomedical imaging* (ISBI):160-163 (2015) *https://bit.ly/3mmtsQm*

Talks

- **French Bureau for Digital Technology Data drink**, Paris, France *Oct. 2020*
  "Analysis and visualization of citizen contributions to the national debate about universal basic income"
- **UCB Statistics and Genomics seminar**, Berkeley (CA), USA *Nov. 2017*
  "Single Cell Dynamics in High-Throughput Time-Lapse Screening Data" [3]
- **ISMB/ECCB conference**, Dublin, Ireland *July 2015*
  "A generic methodological framework for studying single cell motility in HT time-lapse data" [4]
- **Bioimage Informatics conference**, Leuven, Belgium *Oct. 2014*
  "A generic methodological framework for studying single cell motility in HT time-lapse data" [4]
- **Women in Machine Learning workshop**, Lake Tahoe (NV), USA *Dec. 2013*
  "MoGDIW: an integrated workflow for cell motility gene discovery in HT time-lapse screening data"
- **Annual meeting of the French Association for Research in Toxicology**, Paris, France *June 2013*
  "Environmental toxicology and bioinformatics: automatic toxicity evaluation from video-microscopy data"

Posters

- **International Conference on Learning Representations**, New Orleans (LA), USA [1] *May 2019*
- **Optimization for ML workshop, NIPS conference**, Long Beach (CA), USA [2] *Dec. 2017*
- **Baylearn**, Cupertino (CA), USA [2] *Sep. 2017*
- **ISBI conference**, Brooklyn (NY), USA [5] *April 2015*
- **Quantitative Bioimaging conference**, Paris, France [4] *Jan. 2015*
- **FEBS/EMBO conference**, Paris, France [4] *Sep. 2014*
- **ML for Comp. Bio. workshop, NIPS conference**, Lake Tahoe (NV), USA *Dec. 2013*

Extra-curricular Activities

Scientific paper reviews *2017 - présent*

Nature Biotechnology, *Cell Chemical Biology*, IEEE *Journal of Selected Topics in Signal Processing*, IEEE *Transactions on Computational Biology and Bioinformatics*, "Women in Machine Learning" workshop, *Pattern Recognition Letters*

Mentoring *2015 - présent*

Guiding undergraduate students in their educational/professional decisions (e.g. Ecole Polytechnique, EPFL)

Feminine student association, Ecole Polytechnique, *Treasurer* *2009*

Created the association to promote Science among female high schoolers and students.

***Arts et Développement* association**, Marseille, France, *Volunteer* *2007-2008*

Animated painting workshops with children from housing projects, managed and designed the overhaul of the association communication supports (website, booklet)

Interests literature (XIX^{th} and XX^{th} centuries), Russian and Italian opera (XIX^{th} century), swimming, yoga (vinyasa, 200hrs teacher training)