Xuedong Shang

Curriculum Vitae

Education

2017–2021 **PhD in Computer Science**, *Inria*, France

My PhD research focuses on sequential decision making with/without side information. In particular, I'm interested in online learning with partial feedback, a.k.a. multi-armed bandits (a particular case of reinforcement learning) and its applications. Typical applications include recommendation systems, portfolio management, hyper-parameter optimisation for machine/deep learning algorithms, etc. Also interested in (deep) reinforcement learning, time series prediction/clustering, optimal transport for natural language processing, etc.
Advisors: Emilie Kaufmann (CNRS), Michal Valko (DeepMind)
Title: Adaptive Methods for Optimization in Stochastic Environments

2015–2017 **Master of Computer Science**, *ancien élève de l'École normale supérieure de Cachan (Rennes Campus)*, France

Courses: machine learning & related applications (cv, nlp, signal processing, etc.), distributed computing, cloud computing and big data, advanced algorithmics, parallel programming, artificial intelligence, intro to statistical learning, operating systems, databases, bioinformatics, signal processing, information theory, principles of computer network.

2014–2015 **Bachelor of Computer Science**, *ancien élève de l'École normale supérieure de Cachan (Rennes Campus)*, France

Courses: algorithmics, theory of computing, object-oriented programming, functional programming, computer architectures and systems, cryptography, image processing, intro to computer network.

2013–2014 **Gap Year**, *engaged with volunteer work*, AOE

Organization: Eduinfinity, a subtitle translation group for MOOC courses.

2012–2013 **Bachelor of Mathematics**, *Université Pierre et Marie Curie (Paris VI)*, France

Courses: probability & statistics, measure theory, topology, differential calculus, complex analysis, stochastic process, numerical anaylsis, abstract algebra.

2008–2011 **Mathematical Preparatory Class**, *Lycée Henri Poincaré*, Nancy, France

Courses: post-secondary preparatory classes preparing for highly selective entrance examinations to the French Grandes Ecoles, including intense courses on mathematics, physics, chemistry, computer science and philosophy.

2005–2008 **High School**, *High School Affiliated to Fudan University*, Shanghai, China

Training

July 2019 **Reinforcement Learning Summer School**, Lille, France

Courses: stochastic bandits, structured bandits, bandits for optimization, recommender systems, basic statistics, neural networks, Markov decsion process, intro to RL, RL for healthcare, policy gradient, RL for energy, RL good practice, deep RL, exploration in RL, RL for video games, safe RL, Monte Carlo tree search, multi-agent learning, RL for neuroscience, robotics.

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Jan 2019 **Machine Learning Summer School**, Stellenbosch, South Africa
Courses: probabilistic thinking, variational inference, causality, deep generative models, kernel methods, reinforcement learning, optimal transport, Gaussian processes, causal inference, dynamic interaction networks, machine learning for conservation, statistical relational learning and probabilistic (logic) programming, Markov chain Monte Carlo, data compression, etc.

Publications

Conference Papers

ICML 2021 **UCB momentum Q-learning: Correcting the bias without forgetting**, in Proceedings of the 38th International Conference on Machine Learning
Pierre Ménard, Omar Darwiche Domingues, **Xuedong Shang** and Michal Valko

ICML 2020 **Gamification of pure exploration for linear bandits**, in Proceedings of the 37th International Conference on Machine Learning
Rémy Degenne, Pierre Ménard, **Xuedong Shang** and Michal Valko

AIStats 2020 **Fixed-confidence guarantee for Bayesian best-arm identification**, in Proceedings of the 23rd International Conference on Artificial Intelligence and Statistics, Palermo, Italy
Xuedong Shang, Rianne de Heide, Emilie Kaufmann, Pierre Ménard and Michal Valko

ALT 2019 **General parallel optimization without metric**, in Proceedings of the 30th International Conference on Algorithmic Theory, Chicago, USA
Xuedong Shang, Emilie Kaufmann and Michal Valko

Software

GitHub Repository **rlberry - A reinforcement learning library for research and education**
Omar Darwiche Domingues, Yannis Flet-Berliac, Edouard Leurent, Pierre Ménard, **Xuedong Shang**

Workshop Papers

ICML 2019 - AutoML **A simple dynamic bandit algorithm for hyper-parameter tuning**, in 6th ICML Workshop on Automated Machine Learning, Long Beach, USA
Xuedong Shang, Emilie Kaufmann and Michal Valko

EWRL 2018 **Adaptive black-box optimization got easier: HCT only needs local smoothness**, in 14th European Workshop on Reinforcement Learning, Lille, France
Xuedong Shang, Emilie Kaufmann and Michal Valko

Preprints

2022 **Safe best-arm identification in linear bandits**, submitted
Xuedong Shang, Igor Colin and Merwan Barlier

2021 **Stochastic bandits with vector losses: Minimizing ℓ^∞-norm of relative losses**, submitted
Xuedong Shang, Han Shao and Jian Qian

2020 **Simple (dynamic) algorithms for hyper-parameter optimization**
Xuedong Shang, Emilie Kaufmann and Michal Valko

2016 **Time series clustering**
Dominique Barbe, Alexandre Debant and **Xuedong Shang**

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Experience

Vocational

June 2021–December 2021 **Quantitative Research Internship (Off-Cycle)**, *SMAD, Barclays*, London, UK
Worked on the eTrading/market-making credit desk.

October 2017–March 2021 **PhD Researcher**, *SequeL, Inria Lille-Nord Europe*, Lille, France
Worked on multi-armed bandits, automated machine learning and reinforcement learning.

March 2020–August 2020 **Research Engineer**, *Noah Ark's Lab*, Paris, France
Worked on automated machine learning, in particular hyper-parameter optimization and safe linear bandits, working with Balázs Kégel (**Huawei Noah's Ark**) and Igor Colin (**Huawei Noah's Ark**).

February 2017–July 2017 **Research Internship**, *SequeL, Inria Lille-Nord Europe*, Lille, France
Hierarchical Bandits for "Black Box" Optimisation and The Monte-Carlo Tree Search, under the supervision of Emilie Kaufmann (**CNRS**) & Michal Valko (**Inria, Google DeepMind**).

May 2016–July 2016 **Research Internship**, *Yamamoto-Cuturi Lab., Graduate School of Informatics, Kyoto University*, Kyoto, Japan
Optimal Transport Geometry for Sentiment Analysis, under the supervision of Marco Cuturi (**ENSAE, Apple**).

May 2015–July 2015 **Research Internship**, *Magnet, Inria Lille-Nord Europe*, Lille, France
Personalized Recommender System, under the supervision of Marc Tommasi (**Inria**).

June 2012–July 2012 **Research Internship**, *CNRS Vérimag*, Grenoble, France
On the Generation of Positivstellensatz Witnesses in Degenerate Cases, under the supervision of David Monniaux (**CNRS**).

Others

May 2019–May 2020 **Secretary-General**, *Union des étudiants et chercheurs chinois à Lille (UCECL)*, Lille, France

June 2018–May 2019 **Member**, *Publicity Department, Union des étudiants et chercheurs chinois à Lille (UCECL)*, Lille, France

July 2013–August 2013 **Summer Internship**, *Corporate Banking Department, Industrial and Commercial Bank of China*, Shanghai, China

August 2012 **Summer Internship**, *International Business Department, Agricultural Bank of China*, Shanghai, China

Computer skills

Programming Languages (Proficient): Python, Julia, Java, OCaml, Kotlin

Programming Languages (Knowledge): C, C++, C#, Objective-C, Swift, Ruby, R, Golang, Bash

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Web	HTML5/CSS3, JavaScript	Crypto & Web3	Solidity
Operating Systems	Linux, Windows, Mac OS	Numerical	Maple, Matlab/Octave
Machine Learning	scikit-learn, PyTorch, Tensorflow, Theano	Data Science	Jupyter Notebook, pandas, BigQuery, seaborn
Toolkits	LaTeX, Git, SVN, Vim, Emacs	Finance	q/kdb+, Bloomberg Terminal
Big Data	MySQL, Hadoop		

Services

Conferences	**NIPS 2017**, External Reviewer
	AIStats 2019, External Reviewer
	ICML 2018, 2019, External Reviewer
	NeurIPS 2019*, 2020, 2021**, Reviewer
	ICLR 2021, Reviewer
	ICML 2021, Expert Reviewer
	ICML 2022, PC Member
Journals	**Mathematics of Operations Research**, Reviewer
Workshops	**ICLR 2019 Workshop LLD**, Reviewer
Organization	**RLSS 2019**, Organization Committee, Teaching Assistant
Others	**ICLR 2020, ICML 2020, NeurIPS 2020**, Volunteer

* - top reviewer, ** - best reviewer

Languages

English	Full Professional Proficiency	*TOEIC 945 (C1); IELTS 8.5/8.5/6.5/7.0 (C1-C2)*
French	Native/Bilingual Proficiency	*TEF 637/591/543/533 (C1-C2)*
Chinese Mandarin	Mother Tongue	
Chinese Shanghainese	Mother Tongue	
Japanese	Limited Working Proficiency	
Spanish	Limited Working Proficiency	

Interests

Academic	Maths, Finance, Crypto, Neuroscience, e-Education
Sports	Football, Basketball, Ski, Cycling, Bouldering
Arts	Piano

Extra

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Eduinfinity	Team leader on computer science courses	*A translation group providing chinese subtitles for courses on Coursera.org, edX.org, etc*
Wikipedia	Wikipedian in English, French, Chinese and Japanese	
Unef	Foreign student candidate at ENS	*National union of students of France*

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