Antoine J.-P. Tixier

Artificial Intelligence, Deep Learning, Machine Learning, Data Science
Natural Language Processing, Graph Mining, Social Network Analysis
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WORK EXPERIENCE

› AI Entrepreneur and Research Scientist, France (remote) April 2020 - current
Co-founder and R&D lead at SafetyAI
SafetyAI is an entity within SafetyFunction, LLC, for which I also work as a research scientist.
• At SafetyAI, our goal is to develop state-of-the-art artificial intelligence solutions to construction safety challenges. We do mainly NLP (NER, information retrieval and extraction, summarization), computer vision (object detection, image classification, image search), and predictive modeling, graph mining, and risk analysis.
• In charge of the entire R&D process, from conducting research, experiments, and paper-writing, to developing scripts, APIs, and desktop and mobile applications (UI and server).
• Involved in the creation of online content (website, marketing and tutorial videos), in strategic decision-making (business model, branding), and in client relationship (legal paperwork, conference calls, demos, email support).
• Work in close collaboration with my associate based in the USA.

› Postdoctoral Researcher, École Polytechnique, France 2015-20
Computer Science Laboratory, DaSciM team
• Topics: representation learning on graph and text data, spoken language understanding, summarization, node/graph classification, link prediction, influential spreader detection, keyword extraction
• Methods: deep learning and machine learning
• Mission: - conducting own research + advising students, engineers and interns (see section)
- lead teaching assistant for two courses (see section)
- managing work package #5 (6 people from 2 companies) of the OpenPaaS::NG project, and managing, on DaSciM's side (3 people), work package #5 of the LinTo project
- writing of proposals to public and private funding organizations

› Graduate Research Assistant, University of Colorado at Boulder, USA 2012-15
Colorado Construction Safety Laboratory, now *Construction Safety Research Alliance*
Research funded by the NSF (see project) and the private sector
• Topics: entity extraction from unstructured text, predictive modeling of injuries, multivariate risk modeling and simulation
• Methods: rule-based NLP, machine learning, probability and statistics
• Mission: conducting research +
- reporting to sponsors via conference calls and presentations
- collaboration with sponsors' IT teams for deployment of predictive models

› Site Manager, Paris greater area, France May-Aug 2011
ARTIS construction. €12M project. Daily coordination of 6 trades (30 people). Worked under pressure within a tight schedule and budget. Quality checking, reporting to owner.

› City Engineer, Montréal, Québec, Canada Jul-Aug 2010
City of Montréal. Many assignments from CAD to site supervision, surveying, and pricing.

TEACHING

› Introduction to Text Mining and NLP (INF582) Springs 2017-18-19-20
École Polytechnique, France (3^{rd} year Polytechnique students)
Professor: M. Vazirgiannis. Attendance: 70. Amount: 5×2 hours per year.
Topics: text representations (vector space model, word graphs, word and document embeddings), information retrieval, keyword extraction, unsupervised and supervised document classification, deep learning for NLP.
Mission: **lead TA**. Design, preparation and teaching of programming sessions, managing course material on e-learning platform, sending announcements, and organizing the collaborative grading process.

› **Advanced Learning for Text and Graph Data (ALTEGRAD)** Springs 2016-17, Falls 2017-18-19
MVA of ENS Cachan, MDS of Polytechnique (two of the best AI French graduate programs)
Professor: M. Vazirgiannis. Attendance: 100. Amount: 7 × 2 hours per year.
Topics: same as INF582 + graph theory concepts, community detection, identification of influential spreaders, influence maximization, graph kernels, and deep learning for graphs.
Mission: **lead TA**. Same as INF582 + created from scratch and administrated 3 Kaggle in-class:
- email recipient recommendation (58 teams, 133 competitors, 1213 entries)
- link prediction in citation networks (36 teams, 88 competitors, 460 entries)
- neural graph regression (46 teams, 97 competitors, 486 entries)

› **Probability, Statistics and Decisions for Civil Engineers (CVEN3227)** Spring 2014
University of Colorado at Boulder, USA (undergraduate level)
Professor: R.B. Corotis. Attendance: 80. Amount: bi-weekly 2-hour sessions over one semester.
Topics: probability theory, random variables and probability distributions, covariance, stochastic processes, parameter estimation, probability density estimation, confidence intervals, statistical inference, hypothesis testing, regression/correlation analyses.
Mission: TA. Held office hours and gave 4 lectures. Designed and graded midterms and finals.
🏆 **Best TA award.**

🎓 EDUCATION

› **Ph.D. in Civil Engineering** - GPA: 3.95/4.00 2013-2015
University of Colorado at Boulder, USA
Advisors: M.R. Hallowell, B. Rajagopalan
Program ranked 9/145 in the US. Statistical modeling, risk analysis, extreme value theory, (un)supervised machine learning, time series analysis, spatial analysis. Applications to hydroclimatology.
🏆 **Doctoral Assistantship for Excellence.**

› **M.S. in Civil Engineering** - GPA: 3.88/4.00 2011-2013
University of Colorado at Boulder, USA
Advisor: M.R. Hallowell
Construction engineering, statistics, productivity, project management (lean/agile approaches).
Master's Research Thesis, 🏆 **Research Assistantship** (2 semesters).

› **M.S. in Mechanical and Electrical Engineering** 2009-2011
ESTP Paris, France. Maths, physics, programming, structures, materials, electronics, electrotechnics, mechanics, hydraulics... Merit-based selection for the double degree program with CU Boulder.

› **Classes préparatoires MPSI-MP** 2007-2009
Lycée Sainte-Marie, Antony, France. Intense training in Maths and Physics.

</> CODING

› Python, R. PyTorch, Keras, TensorFlow. Literate programming/automatic report generation with R Markdown, Knitr, IPython notebooks, Google colab. LaTeX, HTML/CSS. Windows, Linux. Parallel and batch processing, cluster computing. MongoDB.

› Contribution of open source code on GitHub: one repository with >390 ★ and >100 ⑂, one repository with >65 ★ and >15 ⑂

› Interactive and progressive web apps with Shiny (reactive/asynchronous programming) and {C3, D3, vis}.js. Development of Python and R APIs with Flask and Plumber.

📰 PAPERS

Publications in top conferences and journals such as ACL, AAAI, EMNLP, EACL, Automation in Construction, Risk Analysis. See list of publications on Google Scholar.

🏆 HONORS & AWARDS

- Oral presentations at ASONAM 2019 (14% acceptance rate) and ICANN 2019 (24%) Summer 2019
- NVidia GPU grant program Spring 2017
- Best Teaching Assistant, Civil Eng. Dept., CU Boulder Spring 2014
- Best Paper (CEM track), 120^{th} ASEE Annual Conference, Atlanta, GA June 2013
- Doctoral Assistantship for Excellence, Civil Eng. Dept., CU Boulder April 2013

→ *highest level of support offered by the department, received over 100 Ph.D. applicants.*

ADVISEES

Doctoral students

- Moussa Kamal Eddine (École Polytechnique), *Deep Learning for NLP* — Dec 2019 - current
  (**1 prepint**)
- Henrietta Baker (University of Edinburgh), *AI for construction safety* — Jan 2019 - Jul 2020
  (**2 Automation in Construction papers**)
- Jean-Baptiste Remy (École Polytechnique), *Deep Learning for NLP* — Jan-June 2019
  (**1 preprint**)
- Guokan Shang (École Polytechnique/Linagora), *abstractive summarization* — 2017 - current
  (**3 long papers at: ACL'18, AACL-IJCNLP'20, COLING'20**)

Master students

Polytechnique 3^{rd} year research project (Nov-Mar):

- Wenjian Dong & Runtian Zhang, *hierarchical self-attention* — 2018-19
- Zekun Zhang & Wensi Ding, *abstractive summarization* (**1 ACL long paper**) — 2016-17
- Irina Stolbova, *sentiment analysis* — 2016-17
- Ndeye Fatou Diop, *word specificity scoring* — 2016-17
- Dmitry Zhukov & Danilo Augusto, *graph-of-words embeddings* — 2015-16

Research engineers

- Xristos Xypolopoulos (DaSciM) (**1 EACL long paper**) — Jan 2018 - current

Interns

- Armita Khajeh Nassiri, *neural graph classification* — Apr-May 2018
- Guillaume Leroy (2^{nd} year ENSTA ParisTech), *graph node embeddings* — May-Aug 2017

SERVICE

Senior Program Committee Member: IJCAI'21
Primary reviewer: NAACL-HLT'21, ACL-IJCNLP'21, EMNLP'20, ACL'20, EMNLP TextGraphs workshops '19, '20, '21, Automation in Construction
Secondary reviewer: CIKM'16, WSDM'17, AAAI'17

LANGUAGES

English: fluent, French: native.

OTHER

IT: Colorado Construction Safety Laboratory website maintainer — 2012-15
Tennis: regional vice-champion (Paris area) with ESTP team, 1^{st} division — 2011

Last updated: January 17, 2021