Qi Chen (She/Her)

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🏠 livreq.github.io Ⓖ Google Scholar in Linkedin

PROFESSIONAL EXPERIENCES

Principle Investigator   Oct.2025 – Present
ELLIS Institute Finland, Helsinki, Finland

Assistant Professor   Oct.2025 – Present
Department of Computer Science, Aalto University, Helsinki, Finland

Faculty Affiliate Researcher   Jun.2024 – Sep.2025
Vector Institute, Ontario, Canada

Postdoc   Apr.2024 – Sep.2025
Data Science Institute, University of Toronto, Ontario, Canada
- Data Science Institute (DSI) Postdoc Fellowship
- DSI Project: "Hypothesis Generation for Biochemistry Foundation Models."
  - Supervisor: Prof. Florian Shkurti
  - Collaborators: Prof. Fabio Ramos and Prof. Alan Aspuru-Guzik.

Senior Algorithm Engineer (NLP)   May. 2019 – Sep. 2019
Bytedance inc., Risk Control, Shenzhen, China
Product: Risk control middleware for TikTok, Douyin, and Huoshan.

- "Online Toxic Text Filtering System."   **Project leader**

Senior Algorithm Engineer (NLP)   Jun. 2017 - May. 2019
Baidu Inc., Emerging Business group, Shenzhen, China
Product: Simeji - 1st ranked Japanese Emoji Keyboard

- "Large Language Models for Automatic Speech Recognition."   **Project leader**
- "Cloud Input Method with Emoji, Kaomoji and Phrase Suggestion."   **Project leader**

Junior Researcher   Dec. 2016 - Feb. 2017
Samsung Research China, Machine Learning Lab, Beijing, China
- "Incidental Scene Text Recognition."   **Project member**

EDUCATION

Ph.D., Computer Science (Honor List)   Sep.2019 – Mar.2024
Laval University, Québec, Canada
- *Supervisor:* Prof. Mario Marchand
- *Thesis:* "Theoretical framework for prior knowledge transfer in deep learning."
- Affiliations: GRAAL Lab, Institut intelligence et données (IID)

Diplôme d'ingenieur (M.Sc. in Engineering)   Sep.2014 – Jul.2016
Télécom Paris, Institut Polytechnique de Paris, Paris, France
- *ParisTech 9+9 Program* (9 Top French Grande-Écoles and Chinese Universities).
- *Major:* Data Science Track and Signal Processing for Artificial Intelligence Track.
- *Degree Project:* "Brain Attention Decoding.", advised by Prof. Slim Essid.

B.Eng., Information Engineering   Aug.2010 – Jun.2014
Southeast University, Nanjing, China
- Chien-Shiung Wu Honors College
  - Talent Training Program in Electrical and Computer Engineering

RESEARCH SUMMARY

My primary research goal is to advance AI by building learning frameworks with solid theoretical foundations, developing innovative machine‑learning algorithms, and apply‑ing them to solve real‑world challenges effectively. Specifically, my key objectives are: (1) designing **cost‑effective** frameworks that leverage prior knowledge from existing models and related tasks, considering data, computation, and memory efficiency; (2) proposing **reliable** algorithms that are robust, fair, safe, and adaptable to dynamic envi‑ronments; and (3) developing **personalized** approaches that can be tailored to specific research domains or personalized user needs.

SELECTED PUBLICATIONS

- **Qi Chen.** [Doctoral Thesis (Excellent)] "Theoretical framework for prior knowledge transfer in deep learning", 2024.
- **Qi Chen**, Jierui Zhu, Florian Shkurti. "Generalization in VAE and Diffusion Model: A Unified Information‑theoretic Analysis" (ICLR 2025)
- **Qi Chen**, Changjian Shui, and Mario Marchand. (**Spotlight**, 3% of submissions) "Generalization Bounds for Meta‑learning: An Information‑theoretic Analysis." Ad‑vances in Neural Information Processing Systems (NeurIPS), 2021. (Acceptance rate of 26%)
- **Qi Chen**, Changjian Shui, Ligong Han, and Mario Marchand. "On the Stability‑Plasticity Dilemma in Continual Meta‑Learning: Theory and Algorithm." Advances in Neural Information Processing Systems (NeurIPS), 2023. (Acceptance rate of 26.1%).
- **Qi Chen**, and Mario Marchand. "Algorithm‑Dependent Bounds for Representation Learning of Multi‑Source Domain Adaptation." International Conference on Artifi‑cial Intelligence and Statistics (AISTASTS), 2023. (Acceptance rate of 29.3%)
- Changjian Shui*, Gezheng Xu*, **Qi Chen**, Jiaqi Li, Charles X. Ling, Tal Arbel, Boyu Wang, and Christian Gagné. "On learning fairness and accuracy on multiple sub‑groups." Advances in Neural Information Processing Systems (NeurIPS), 2022. (Acceptance rate of 25.6%)

TEACHING AND RESEARCH SERVICES

- Teaching Assistant, Laval University   Fall 2019, Fall 2020, Fall 2021, Fall 2022
  - GLO2100: Data Structure and Algorithm for Engineer

- Conference Reviewer
  - International Conference on Artificial Intelligence and Statistics (AISTATS) 2020, 2023, 2024
  - International Conference on Machine Learning(ICML)   2022, 2023, 2024
  - Neural Information Processing Systems (NeurIPS)   2022, 2023, 2024
  - International Conference on Learning Representations (ICLR)   2024, 2025
- Journal Editor
  - Action Editor of TMLR   Nov. 2025
- Journal Reviewer
  - IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
  - Transaction on Machine Learning Research (TMLR)
  - IEEE Transactions on Neural Networks and Learning Systems (TNNLS)

HONORS & AWARDS

- University of Toronto, Data Science Institute (DSI)   2024-2025
  - **DSI Postdoc Fellowship (61500$ plus benefits)**
- Laval University,   Jun. 2024
  - **Honor List of Doctorate Program Graduates**
- **Top Reviewers of NeurIPS (top 10%)**   2022
- Laval University,   2019-2023
  - Doctorate Merit Scholarship (4500$)
  - Doctorate Success Scholarships (3500$)
  - Doctorate Admission Scholarship (2000$)
- Baidu, Emerging Business Group,   2018
  - **Outstanding Employee Award (Quarter-2)**
  - **Certified Interviewer**
- Telecom Paris   2015
  - **Travel grant for Athens Week (500 Euros)**
- Telecom Paris   2014-2016
  - **Scholarship of Chinese Government (1200 Euros per month)**
- Undergraduate Mathematical Contest in Modeling (CUMCM)   Sep. 2012
  - **National Second prize, top 8%**
- Undergraduate Electronic Design Contest (*Texas Instrument Cup*)   Aug. 2012
  - **Provincial** Second prize
- Southeast University   May 2013
  - Excellence Award of **National** Student Innovation Training Program
- Southeast University   2011, 2012, 2013
  - Honor of **Academic Excellent** Undergraduate Student, top 3%
- **Merit Undergraduate Student** of Southeast University   2012-2013
- **Merit Undergraduate Student** of Southeast University   2011-2012
- Southeast University   2012
  - **Jin Sheng Scholarship** (Tier-1 Scholarship, top 5%, 5000RMB)
  - **First prize** of the Mathematical Contest in Modeling, top 0.5%
- Scholarships for Foundation Courses in Southeast University   2010-2013
  - Mathematics, Physics, and Computer Science, etc... (top 10%)

TALKS

- Lancaster University CSML Seminar, UK (Remote)   Mar. 2026
  - Theoretical understanding of generalization and memorization in generative models.
- ELLIS Institute Finland Scientific Seminar Talk, Helsinki   Nov. 2025
  - Generalize to Discover
- Vector Institute, Toronto   Nov. 2024
  - Towards understanding evolving patterns in sequential data.
- Beneva Insurance Group, Quebec   Nov. 2023

- – On Distribution Shifts in Insurance Data, How to Address It?
- Department of computer science, Laval University, Quebec   Apr. 2023
  - – On Representation Learning of Multi‑Source Domain Adaptation: Algorithm and Algorithm‑Dependent Bounds.
- Department of computer science, Laval University, Quebec   Apr. 2022
  - – Understanding meta‑learning from information‑theoretic perspective.
- Horizon Robotics Inc., Beijing. (Rmote)   Dec. 2020
  - – Introduction to Domain Adaptation.
- The 24th Annual Conference of the ANLP, Okayama, Japan   2018
  - – Investigating context influence in character‑level LSTM methods for Japanese auto punctuation.

FULL PUBLICATIONS

(* Equal Contribution)

Doctoral Thesis (Excellent)
  T1 **Qi Chen.** "Theoretical framework for prior knowledge transfer in deep learning", 2024.

Preprints and In‑progress Work
  P1 **Qi Chen**, Fabio Ramos, Alan Aspuru‑Guzik, Florian Shkurti. "Informing Acquisition Functions via Foundation Models for Molecular Discovery."   2025
  P2 Gezheng Xu, **Qi Chen**, Qiuhao Zeng, Charles Ling, Boyu Wang. "Histogram‑Guided Source‑Free Domain Adaptive Regression."   2025

Conference Proceedings
  C1 **Qi Chen**, Jierui Zhu, Florian Shkurti. "Generalization in VAE and Diffusion Model: A Unified Information‑theoretic Analysis" (ICLR 2025)
  C2 **Qi Chen**, Changjian Shui, and Mario Marchand. (**Spotlight**, 3% of submissions) "Generalization Bounds for Meta‑learning: An Information‑theoretic Analysis." Advances in Neural Information Processing Systems (NeurIPS), 2021. (Acceptance rate of 26%)
  C3 **Qi Chen**, Changjian Shui, Ligong Han, and Mario Marchand. "On the Stability‑Plasticity Dilemma in Continual Meta‑Learning: Theory and Algorithm." Advances in Neural Information Processing Systems (NeurIPS), 2023. (Acceptance rate of 26.1%).
  C4 **Qi Chen**, and Mario Marchand. "Algorithm‑Dependent Bounds for Representation Learning of Multi‑Source Domain Adaptation." International Conference on Artificial Intelligence and Statistics (AISTASTS), 2023. (Acceptance rate of 29.3%)
  C5 Gezheng Xu, **Qi Chen**, Charles Ling, Boyu Wang, Changjian Shui. "Intersectional Unfairness Discovery." International Conference on Machine Learning (ICML) 2024. (Acceptance rate of 27.5%)
  C6 Changjian Shui*, Gezheng Xu*, **Qi Chen**, Jiaqi Li, Charles X. Ling, Tal Arbel, Boyu Wang, and Christian Gagné. "On learning fairness and accuracy on multiple sub‑groups." Advances in Neural Information Processing Systems (NeurIPS), 2022. (Acceptance rate of 25.6%)
  C7 Qiuhao Zeng, Long‑Kai Huang, **Qi Chen**, Charles Ling, and Boyu Wang. (**Spotlight**) "Towards Understanding Evolving Patterns in Sequential Data," Neural Information Processing Systems (NeurIPS), 2024. (Acceptance rate of 25.8%)

C8 Changjian Shui, **Qi Chen**, Jiaqi Li, Boyu Wang, and Christian Gagné. "Fair Representation Learning through Implicit Path Alignment." International Conference on Machine Learning (ICML), 2022. (Acceptance rate of 21.9%)

C9 Ligong Han, Song Wen, **Qi Chen**, Zhixing Zhang, et al. "Proxedit: Improving tuning-free real image editing with proximal guidance." WACV 2024.

C10 **Qi Chen**, Jianmin Wu, Tianhuang Su. "Investigating context influence in character Level LSTM methods for Japanese Auto Punctuation." (ANLP 2018).

Journal Articles

J1 Changjian Shui, **Qi Chen**, Jun Wen, Fan Zhou, Christian Gagné, and Boyu Wang. "A novel domain adaptation theory with Jensen–Shannon divergence." Knowledge-Based Systems, 2022.

INDUSTRIAL PROJECTS & MENTORSHIP

Hypothesis Generation for Biochemistry Foundation Models.   Jun.2024 – present
Data Science Institute, University of Toronto, Ontario, Canada
  Mentee: Jierui Zhu

- previous undergrad at University of Toronto.
- now Ph.D. student at University of Chicago.

Online Toxic Text Filtering System.   May. 2019 – Sep. 2019
Bytedance inc., Risk Control, Shenzhen, China
- Improved model performance using transformers, with Dazhao Tan.
- Built automatic train-update pipeline to address online distribution shift, with Weiyuan Xu.

Large Language Models for Automatic Speech Recognition.   Jun. 2017 - May. 2019
Baidu Inc., Emerging Business group, Shenzhen, China
- Designed an English-Katakana transliteration algorithm to improve multilingual recognition, with Chao Huang.
- Optimized the ASR accuracy by statistically generating and mixing different domain language models.
- Improved the ASR punctuation accuracy with a local attention character-level LSTM method, **work presented at ANLP 2018.**
- Developed an automatic bad-case analysis tool to locate recognition bottlenecks.

Cloud Input Method with Emoji, Kaomoji and Phrase Suggestion.   Jun. 2018 - May. 2019
Baidu Inc., Emerging Business group, Shenzhen, China
- Project code refactoring
- Designed statistical new hot words mining algorithm, with Guangjun Wang.
- Optimized the large-scale N-gram language model, with Cong Zhang.
- Built a learn-to-rank model that automatically adjusts the display order of the kaomojis and emojis given the kana query.

Incidental Scene Text Recognition   Dec. 2016 - Feb. 2017
Samsung Research China, Machine Learning Lab, Beijing, China
- Developed a novel rotation-RPN method to improve Text localization performance based on Faster RCNN.
- Implemented a Cuda version Rotation RoI pooling layer in Caffe.
- Improved recognition performance with hard-example-mining.

SKILLS

Coding Python, C++, SQL, Shell Script, Java, Scala, Matlab, etc...
    ML Pytorch, Sklean, Caffe, Tensorflow, Keras, Hadoop, Spark, Mecab, etc...
 Tools Kubernetes, Docker, GIT, MySQL, SQLite
 Lang. Chinese (Native), English (Fluent), **French** (Fluent)