Frank XING

NUS COM2-03-39, Singapore 117418 https://frank-xing.info xing@nus.edu.sg

Research Interests

Financial forecasting and optimization
Knowledge-driven algorithms and information systems design
Natural language processing and knowledge engineering
Social impact of AI

Professional Appointments

Assistant Professor, National University of Singapore — 2021 - now
Created the Financial Information & Knowledge Engineering research group
Taught a new course at the Department of Information Systems and Analytics

Presidential Postdoctoral Fellow, Nanyang Technological University — 2019 - 2021
Amongst 12 awardees selected from 894 cross-disciplinary applicants worldwide

Machine Learning Specialist, Continental AG — 2018 - 2019
Acted as a tech lead and mentored innovation projects in NLP and machine learning

Academic Qualifications

PhD in Computer Science and Engineering, Nanyang Technological University — 2016 - 2019
Thesis: Textual Knowledge Integration for Financial Asset Management

BSc in Information Systems / BA in Economics, Peking University — 2011 - 2015
Thesis: Weakly Supervised Image Semantic Segmentation with Conditional Random Field

Awards and Honors

Presidential Postdoctoral Fellowship, Nanyang Technological University — 2019

Temasek Research Scholarship, Nanyang Technological University — 2016

May Fourth Scholarship, Peking University — 2013

Wang Jin-Yun Scholarship, Wuhan No.2 Middle School — 2011

Research Grants

Advancing Information-intensive Financial Modeling with NLP Solutions, Role: **PI** — 2021 - 2024
Singapore Ministry of Education AcRF Tier 1, SGD 180,000

Innovative Approaches to Portfolio Optimization, Role: **PI** — 2019 - 2021
NTU Presidential Postdoctoral Fellowship Research Grant, SGD 200,000

Conti+ Service Chatbot, Role: Staff — 2018
Continental Internal R&D Project, EUR 30,070

Irony Detection on the Internet, Role: **PI** — 2013
PKU President's Undergraduate Research Fellowship, CNY 2,000

Publications

Citations

Web of Science	count: 810	h-index: 10
Scopus	count: 1022	h-index: 12
Google Scholar	count: 1518	h-index: 13

Books and Chapters

1. **Xing, F.**; Cambria, E.; Welsch, R. E. (2019). Intelligent Asset Management. **Springer International Publishing**. In Series "Socio-Affective Computing", ISBN: 978-3-030-30262-7.

Journal Papers

8. Du, K.; **Xing, F.**; and Cambria, E. (2023). Incorporating multiple knowledge sources for targeted aspect-based financial sentiment analysis. *ACM Transactions on Management Information Systems*. 14(3), art 23, pp 1-24.
7. Ma, Y.; Nguyen, K. L.; **Xing, F.**; and Cambria, E. (2020). A survey on empathetic dialogue systems. *Information Fusion*. 64, pp 50-70.
6. **Xing, F.**; Cambria, E.; and Zhang, Y. (2019). Sentiment-aware volatility forecasting. *Knowledge-Based Systems*. 176, pp 68-76.
5. **Xing, F.**; Cambria, E.; and Welsch, R. E. (2019). Growing semantic vines for robust asset allocation. *Knowledge-Based Systems*. 165, pp 297-305.
4. **Xing, F.**; Pallucchini, F.; and Cambria, E. (2019). Cognitive-inspired domain adaptation of sentiment lexicons. *Information Processing & Management*. 56(3), pp 554-564. [Honorable Mention for 2019 Best Paper Award]
3. Malandri, L.; **Xing, F.**; Orsenigo, C.; Vercellis, C.; and Cambria, E. (2018). Public mood-driven asset allocation: The importance of financial sentiment in portfolio management. *Cognitive Computation*. 10(6), pp 1167-1176.
2. **Xing, F. Z.**; Cambria, E.; and Welsch, R.E. (2018). Intelligent asset allocation via market sentiment views. *IEEE Computational Intelligence Magazine*. 13(4), pp 25-34.
1. **Xing, F. Z.**; Cambria, E.; and Welsch, R.E. (2018). Natural language based financial forecasting: A survey. *Artificial Intelligence Review*. 50(1), pp 49-73.

Conference Papers

9. Saha, J.; Patel, S.; **Xing, F.**; and Cambria, E. (2022). Does social media sentiment predict Bitcoin trading volume? *ICIS*. Copenhagen, Denmark.
8. Cambria, E.; Liu, Q.; Decherchi, S.; **Xing, F.**; and Kwok, K. (2022). SenticNet 7: A commonsense-based neuro-symbolic AI framework for explainable sentiment analysis. *LREC*. Marseille, France.
7. Young, T.; **Xing, F.**; Pandelea, V.; Ni, J.; and Cambria, E. (2022). Fusing task-oriented and open-domain dialogues in conversational agents. *AAAI*. Vancouver, Canada.
6. **Xing, F.**; Hoang, D.-H.; and Vo, D.-V. (2021). High-frequency news sentiment and its application to forex market prediction. *HICSS*. Online.
5. **Xing, F.**; Malandri, L.; Zhang, Y.; and Cambria, E. (2020). Financial sentiment analysis: An investigation into common mistakes and silver bullets. *COLING*. Online.
4. Cambria, E.; Li, Y.; **Xing, F.**; Poria, S.; and Kwok, K. (2020). SenticNet 6: Ensemble application of symbolic and subsymbolic AI for sentiment analysis. *CIKM*. Online.

3. Bai, H.; **Xing, F.**; Cambria, E.; and Huang, W.-B. (2019). Business taxonomy construction using concept-level hierarchical clustering. *FinNLP@IJCAI*. Macao, China.
2. **Xing, F. Z.**; Cambria, E.; Malandri, L.; and Vercellis, C. (2018). Discovering Bayesian market views for intelligent asset allocation. *ECML-PKDD*. Dublin, Ireland.
1. **Xing, F. Z.**; Cambria, E.; and Zou, X. (2017). Predicting evolving chaotic time series with fuzzy neural networks. *IJCNN*. Anchorage, USA.

Guest Editorials

4. **Xing, F.**; Chaturvedi, I.; Cambria, E.; Hussain, A.; and Schuller, B. (2023). Neurosymbolic artificial intelligence for sentiment analysis. *IEEE Transactions on Affective Computing*. forthcoming.
3. Cambria, E.; **Xing, F.**; Thelwall, M.; and Welsch, R. (2022). Sentiment analysis as a multidisciplinary research area. *IEEE Transactions on Artificial Intelligence*. 3(5), pp 638-641.
2. Malandri, L.; Porcel, C.; **Xing, F.**; Serrano-Guerrero, J.; and Cambria, E. (2022). Soft computing for recommender systems and sentiment analysis. *Applied Soft Computing*. 118, 108246.
1. **Xing, F.**; Poria, S.; Cambria, E.; and Welsch, R. (2020). Social media marketing and financial forecasting. *Information Processing & Management*. 57(5), 102314.

Invited Talks and Presentations

9. Financial effects of sustainability reporting behaviors, *NUS-DISA Summer Research Workshop*, Singapore, Jul 2022.
8. Financial effects of sustainability reporting behaviors, *University of Milano-Bicocca Research Seminar*, Milan, Italy, Jun 2022.
7. Financial sentiment analysis: a neurosymbolic approach, *University of Essex Research Seminar*, Colchester, UK, Nov 2021.
6. Financial sentiment analysis, *Singapore Symposium on Sentiment Analysis*, Singapore, Mar 2021.
5. Intelligent asset management and natural language processing, *International Conference on Computational and Methodological Statistics*, Virtual, Dec 2020.
4. Managing your finances with AI, *NTU Institute of Advanced Studies Webinar*, Virtual, May 2020.
3. Three interfaces between NLP and asset allocation, *Knut Wicksell Centre for Financial Studies Workshop*, Lund, Sweden, Jan 2020.
2. Stock market prediction meets uncertainty and high-dimension, *Westlake University Research Seminar*, Hangzhou, China, Oct 2019.
1. Sentiment computing and sentiment time series, *Wuhan University of Technology Research Forum*, Wuhan, China, Mar 2019

Teaching

5. **Risk Analytics for Financial Services (BT4016)**, National University of Singapore
   Spring 2023
4. **Data Engineering (IS3107)**, National University of Singapore
   Spring 2022 (new course developed); Fall 2022; Fall 2023

3. **Topics in Information Systems and Analytics Research (IS6000)**, National University of Singapore
   Fall 2021 (co-teaching)

2. **Introduction to Information Retrieval (CZ4034)**, Nanyang Technological University
   Spring 2016 (TA); Spring 2021 (co-teaching)

1. **Object Oriented Design & Programming in Java (CZ2002)**, Nanyang Technological University
   Spring 2016 (TA)

Supervision and Placement

Doctoral Students
X. Guan (2023-), topic: green finance
K. Du (2022-), topic: financial sentiment analysis, co-advising
C. Lu (2021-), topic: reinforcement learning for portfolio management, co-advising
Q. Qi (2021-), topic: financial risk analysis of connected firms

Notable Master/BComp Dissertation Students
S. Chen (2022-2023), Title: Effects of emojis in sentiment analysis
T. Wee (2022-2023), Title: Mapping ESG trends across equity markets, Placement: RSAF
F. Pallucchini (2018-2019), Title: Domain adaptation of sentiment lexicons, Placement: Uni Milano-Bicocca

Research Assistant/Associate
C. Wang (2023-)
X. Chen (2020-2021), Placement: Hong Kong University (PhD student)

Academic and Departmental Services

Editorial Board, Journal Guest Editor, and Conference Area/Track/Session Chair

IEEE Transactions on Affective Computing (TAC), vol 14, special issue 4	2023
IEEE Transactions on Artificial Intelligence (TAI), vol 3, special issue 5	2022
Applied Soft Computing, vol 118, special issue	2022
Information Processing & Management, vol 57, special issue 5	2020
Sentiment Analysis Session Chair, International Conference on Computational Linguistics	2020

Journal and Conference Reviewer

Information Fusion -*Outstanding Contribution Award*	2019
Knowledge-Based Systems -*Outstanding Contribution Award*	2018
Decision Support Systems (DSS)	2023
IEEE Transactions on Affective Computing (TAC)	2019 - 2023
IEEE Transactions on Engineering Management (TEM)	2020
IEEE Computational Intelligence Magazine (CIM)	2019
Information Processing & Management (IPM)	2018 - 2021
Information Systems Frontiers (ISFI)	2022
International Journal of Forecasting (IJF)	2020
AAAI Conference on Artificial Intelligence (AAAI)	2021 - 2022
International Joint Conference on Artificial Intelligence (IJCAI)	2021 - 2022
International Conference on Artificial Intelligence and Statistics (AISTATS)	2021
Annual Meeting of the Association for Computational Linguistics (ACL)	2021 - 2022
Economics and Natural Language Processing Workshop (ECONLP)	2021
International Workshop on Natural Language Processing for Social Media (SocialNLP)	2021

International Conference on Information Systems (ICIS)	2022
Hawaii International Conference on System Sciences (HICSS)	2021 - 2022
Pacific Asia Conference on Information Systems (PACIS)	2023

Grant Proposal Reviewer

The Czech Science Foundation: Standard Project 24-****5S	2023
The Czech Science Foundation: Standard Project 23-****7S	2022
The Czech Science Foundation: Standard Project 22-****6S	2021

Professional Society Membership

AIS (Association for Information Systems)	2021 - 2023
INFORMS (Institute for Operations Research and Management Sciences)	2020 - 2023
IEEE (Institute of Electrical and Electronics Engineers)	2016 - 2017

Administrative Roles

Interviewer, Aptitude Based Admissions, NUS School of Computing	2022
Interviewer, Faculty Candidate Evaluation, NUS School of Computing	2021 - 2023
Interviewer, Discretionary Admission and Scholarship Selection, NUS School of Computing	2021 - 2022
Member, Publication Ranking Committee, NUS School of Computing	2021 - 2022
Final Year Project Evaluator, NUS School of Computing	2021 - 2022
PhD Thesis Proposal Examiner, NUS School of Computing	2022 - 2023

Media Coverage

2. Using News Sentiments in the High-Frequency Forex Market (by Simon Rodda), *Dow Jones Newswires*, Dec 2020.

1. Machine Learning Applied to Quantitative Investment (no.62, in Chinese), *QIML*, Jul 2018

Last updated: June 2023.