


# Frank XING | 邢竹天

 NUS COM2-03-39, Singapore 117418

 <https://frank-xing.info>

 [xing@nus.edu.sg](mailto:xing@nus.edu.sg)

## Research Interests

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

## Professional Appointments

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<b>Assistant Professor, National University of Singapore</b> Affiliation: Department of Information Systems and Analytics; Asian Institute of Digital Finance	2021 - now
<b>Presidential Postdoctoral Fellow, Nanyang Technological University</b> Amongst 12 awardees selected from 894 cross-disciplinary applicants worldwide	2019 - 2021
<b>Machine Learning Specialist, Continental AG</b> Acted as a technical lead and mentored innovation projects in NLP and machine learning	2018 - 2019

## Academic Qualifications

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<b>PhD in Computer Science and Engineering, Nanyang Technological University</b> Thesis: Textual Knowledge Integration for Financial Asset Management	2016 - 2019
<b>BSc in Information Systems / BA in Economics, Peking University</b> Thesis: Weakly Supervised Image Semantic Segmentation with Conditional Random Field	2011 - 2015

## Awards and Honors

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<b>Presidential Postdoctoral Fellowship</b> , Nanyang Technological University	2019
<b>Temasek Research Scholarship</b> , Nanyang Technological University	2016
<b>May Fourth Scholarship</b> , Peking University	2013
<b>Wang Jin-Yun Scholarship</b> , Wuhan No.2 Middle School	2011

## Research Grants

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<b>Advancing Information-intensive Financial Modeling with NLP Solutions</b> , Role: PI Singapore Ministry of Education AcRF Tier 1, SGD 180,000	2021 - 2024
<b>Innovative Approaches to Portfolio Optimization</b> , Role: PI NTU Presidential Postdoctoral Fellowship Research Grant, SGD 200,000	2019 - 2021
<b>Conti+ Service Chatbot</b> , Role: Staff Continental Internal R&D Project, EUR 30,070	2018
<b>Irony Detection on the Internet</b> , Role: PI PKU President's Undergraduate Research Fellowship, CNY 2,000	2013

### Citations

Web of Science	count: 650	h-index: 9
Scopus	count: 824	h-index: 10
Google Scholar	count: 1268	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**. forthcoming.
7. Ma, Y.; Nguyen, K. L.; **Xing, F. Z.**; and Cambria, E. (2020). A survey on empathetic dialogue systems. **Information Fusion**. 64, pp 50-70.
6. **Xing, F. Z.**; Cambria, E.; and Zhang, Y. (2019). Sentiment-aware volatility forecasting. **Knowledge-Based Systems**. 176, pp 68-76.
5. **Xing, F. Z.**; Cambria, E.; and Welsch, R. E. (2019). Growing semantic vines for robust asset allocation. **Knowledge-Based Systems**. 165, pp 297-305.
4. **Xing, F. Z.**; 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. Z.**; 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

12. Saha, J.; Patel, S.; **Xing, F.**; and Cambria, E. (2022). Does social media sentiment predict Bitcoin trading volume? **ICIS**. Copenhagen, Denmark.
11. Cambria, E.; Liu, Q.; Decherchi, S.; **Xing, F.**; and Kwok, K. (2022). SenticNet 7: A commonsense-based neurosymbolic AI framework for explainable sentiment analysis. **LREC**. Marseille, France.
10. 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.
9. **Xing, F.**; Hoang, D.-H.; and Vo, D.-V. (2021). High-frequency news sentiment and its application to forex market prediction. **HICSS**. Online.
8. **Xing, F.**; Malandri, L.; Zhang, Y.; and Cambria, E. (2020). Financial sentiment analysis: An investigation into common mistakes and silver bullets. **COLING**. Online.
7. 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.

6. Bai, H.; **Xing, F.**; Cambria, E.; and Huang, W.-B. (2019). Business taxonomy construction using concept-level hierarchical clustering. **FinNLP@IJCAI**. Macao, China.
5. **Xing, F. Z.**; Cambria, E.; Malandri, L.; and Vercellis, C. (2018). Discovering Bayesian market views for intelligent asset allocation. **ECML-PKDD**. Dublin, Ireland.
4. **Xing, F. Z.**; Cambria, E.; and Zou, X. (2017). Predicting evolving chaotic time series with fuzzy neural networks. **IJCNN**. Anchorage, USA.
3. **Xing, F. Z.**; Ho, D; Hamzah, D; and Cambria, E. (2017). Classifying World Englishes from a lexical perspective: A corpus-based approach. **CICLing**. Budapest, Hungary.
2. **Xing, F. Z.**; Cambria, E.; Huang, W.-B.; and Xu, Y. (2016). Weakly supervised semantic segmentation with superpixel embedding. **ICIP**. Phoenix, USA.
1. **Xing, F. Z.** and Xu, Y. (2015). A logistic regression model of irony detection in Chinese internet texts. **CICLing**. Cairo, Egypt.

### Guest Editorials

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

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"Financial Effects of Sustainability Reporting Behaviors", University of Milano-Bicocca	2022
"Financial Effects of Sustainability Reporting Behaviors", NUS-DISA Summer Research Workshop	2022
"Financial Sentiment Analysis: A Neurosymbolic Approach", University of Essex	2021
"Clustering in Financial Analysis", National University of Singapore Seminar	2021
"Financial Sentiment Analysis", Singapore Symposium on Sentiment Analysis	2021
"Intelligent Asset Management and NLP", CFE-CMStatistics Conference	2020
"Managing your Finances with AI", NTU Institute of Advanced Studies Webinar	2020
"Three interfaces between NLP and asset allocation", Lund University	2020
"Stock market prediction meets uncertainty and high-dimension", Westlake University	2019
"From informatization to intelligence", Peking University	2019
"Sentiment and sentiment time series", Wuhan University of Technology	2019

### Teaching

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<b>BT4016: Risk Analytics for Financial Services</b> National University of Singapore, Spring	2023
<b>IS3107: Data Engineering</b> (new module developed) National University of Singapore, Spring and Fall	2022
<b>IS6000: Topics in Information Systems and Analytics Research</b> (co-teaching) National University of Singapore, Fall	2021
<b>CZ4034: Introduction to Information Retrieval</b> (co-teaching) Nanyang Technological University, Spring	2021

<b>CZ2002: Object Oriented Design &amp; Programming in Java (TA)</b>	2016
Nanyang Technological University, Spring	
<b>CZ4034: Introduction to Information Retrieval (TA)</b>	2016
Nanyang Technological University, Spring	

## Supervision

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### Doctoral Student

Qi Qi (2021-), topic: financial risk analysis of connected firms

Chung-I Lu (2021-), topic: reinforcement learning for portfolio management, co-advising

Kelvin Du (2022-), topic: financial sentiment analysis, co-advising

### Notable Master/BComp Dissertation Student

Siyi Chen (2022), topic: emojis in financial sentiment analysis

Filippo Pallucchini (2018-2019), Placement: Research Fellow @ University of Milano-Bicocca

### Research Assistant/Associate

Xiuyu Chen (2020-2021), Placement: PhD student @ Hong Kong University

## Academic and Departmental Services

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

IEEE Transactions on Affective Computing (TAC), forthcoming special issue 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

European Journal of Finance (EJOF) 2021

IEEE Transactions on Affective Computing (TAC) 2019 - 2022

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

### Grant Proposal Reviewer

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 - 2022
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

### Media Coverage

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Using News Sentiments in the High-Frequency Forex Market (by Simon Rodda), <b>Dow Jones: Dec 14</b>	2020
Machine Learning apply to Quantitative Investment no.62, <b>QIML: Jul 12</b>	2018

### Referees

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Available upon request.

Last updated: Jan 2023.