Chuan-Ju Wang (王釗茹)

Research Fellow (Professor)
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PARTICULARS

EDUCATION

National Taiwan University — Taipei, Taiwan
Ph.D. in Computer Science and Information Engineering — *April 2011*

National Chiao Tung University — Hsinchu, Taiwan
B.S. in Computer Science and Information Engineering — *June 2006*

RESEARCH INTERESTS

- Data Analytics: financial analysis, text mining, recommender systems, and machine learning
- Financial Computation: lattice models, simulation, derivative pricing, risk management

DISSERTATION

Title: "On the Construction and Complexity of Bivariate Lattices"
Advisor: Prof. Yuh-Dauh Lyuu

My thesis is aimed to propose accurate and efficient lattices to price financial securities. In my thesis, a lattice for the jump-diffusion process is proposed; to my best knowledge, this work is not only the first study to deal with the oscillation problem under the jump-diffusion process, but also the first attempt to reduce the time complexity of the lattice for the jump-diffusion process from earlier works of $O(n^3)$ to $O(n^{2.5})$. Furthermore, the thesis proposes the first bivariate lattice that guarantees valid probabilities even for the interest models that allow rates to go without bounds in magnitude, and the proposed bivariate lattice has been proved to be optimal.

ACADEMIC HONORS

- The third (Chinese), seventh (Russian), and eighth (Persian) place of the TREC Cross-language Information Retrieval (NeuCLIR) 2022 contest, 2022

- The first place in the manual run and ninth place in the automatic run of the TREC Conversational Assistance Track (CAsT) 2022 contest, 2022

- The second and third place in the manual run and seventh and eighth place in the automatic run of the TREC Conversational Assistance Track (CAsT) 2021 contest, 2021

- The Exploration Research Award 2021 from the Pan Wen-Yuan Foundation, 2021
  潘文淵文教基金會2021考察研究獎

- The K. T. Li Young Researcher Award, 2020
  2020「李國鼎青年研究獎」

- The second, third, and fifth place in the automatic response retrieval and fourth place in the manual retrieval of the TREC Conversational Assistance Track (CAsT) contest, 2020

- The Young Scholars' Creativity Award 2020 from Foundation for the Advancement of Outstanding Scholarship, 2020
  傑出人才發展基金會第八屆「年輕學者創新獎」

- The first place in the automatic run and the second place in the manual run of the TREC Conversational Assistance Track (CAsT) contest, 2019

- Runner-up Best Short Paper Award, the 12th ACM Conference on Recommender Systems (RecSys'18), Vancouver, 2018

- Semifinalist for Best Paper Award in Options and Derivatives, the 2018 Annual Meeting of the Financial Management Association (FMA'18), San Diego, 2018

- The project, Financial Unstructured Data Analysis, Understanding, and Applications, was awarded the Project for Excellent Junior Research Investigators, MOST, for 3 years, 2018/8 – 2021/7
  科技部優秀年輕學者研究計畫

- Notable Article of the 21st Annual Best of Computing selected by ACM Computing Reviews, 2017

- The 10th Best S&F Paper Award, 2016
  第十屆證券暨期貨金椽獎–學術組優等獎

- Best Paper Award in Derivatives Sponsored by Chicago Trading Company, the 2015 Annual Meeting of the Financial Management Association (FMA'15), Orlando, 2015

- MOST Award for Talent Subsidy Incentives by Faculty Members and Researchers, 2014/08 – 2015/07
  103年度國科會補助大專校院獎勵特殊優秀人才審定通過

- MOST Award for Talent Subsidy Incentives by Faculty Members and Researchers, 2013/08 – 2014/07
  102年度國科會補助大專校院獎勵特殊優秀人才審定通過

- Best Paper Award, IEEE Conference on Computational Intelligence for Financial Engineering & Economics (CIFEr'12), New York, 2012

- Best Doctoral Dissertation Runner-up Award of Operations Research Society of Taiwan (ORSTW) and Chinese Institute of Decision Sciences (CID), 2011
  台灣作業研究學會暨中華決策科學學會碩博士論文競賽博士組第二名

- NSC Predoctoral Research Abroad Award, Taiwan, 2010
  中華民國行政院國家科學委員會補助博士生赴國外從事研究獎學金

- Best Paper Award, in the Complexity Session, International Multi-Conference on Complexity, Informatics and Cybernetics (IMCIC'10), Orlando, USA, 2010

- Academic Achievement Award, National Chiao Tung University, 2003 – 2006
  國立交通大學資訊工程學系書卷獎

WORKING EXPERIENCE

- **Research Fellow (Professor)**
  Research Center of Information Technology Innovation, Academia Sinica, September 2023 – Present

- **Associate Research Fellow (Associate Professor)**
  Research Center of Information Technology Innovation, Academia Sinica, June 2019 – September 2023

- **Assistant Research Fellow (Assistant Professor)**
  Research Center of Information Technology Innovation, Academia Sinica, August 2016 – June 2019

- **Joint Appointment Associate Professor**
  Department of Information Management and Finance, National Chiao Tung University, August 2019 – July 2020

- **Adjunct Associate Professor**
  Department of Computer Science, University of Taipei, August 2016 – July 2017

- **Associate Professor**
  Department of Computer Science, University of Taipei, February 2016 – July 2016

- **Assistant Professor**
  Department of Computer Science, University of Taipei, August 2011 – January 2016
  Course: Probability, System Programming, Web Search and Mining, Social Network and Applications, Advanced Educational Statistics

- **Adjunct Assistant Professor**
  Department of Computer Science, National Chengchi University, February 2012 – July 2014
  Computer Programming, Department of Mathematical Sciences
  Course: Computer Programming

- **Instructor**
  Java and JSP Programming, WEB Applications, Database, Information System Training Program of Department of Computer Science and Information, National Taiwan University, March 2007 – July 2010

- **Visiting Predoctoral Student**
  Northwestern University, Evanston, IL, USA, September 2010 – March 2011
  Advisor: Prof. Ming-Yang Kao
  Research topics: optimization for simulation; prediction market

SELECTED PUBLICATIONS

- *Journal Papers*

  - Cheng-Der Fuh and **Chuan-Ju Wang**. Efficient Exponential Tilting with Applications. *Statistics and Computing*, 34(65), Article No. 65, 2024.

  - Cheng-Der Fuh, **Chuan-Ju Wang**, and Chen-Hung Pai. Markov Chain Importance Sampling for Minibatches. *Machine Learning*, 113, 789–814, 2024. (The first two authors contributed equally to this work.)

  - Tian-Shyr Dai, Chen-Chiang Fan, Liang-Chih Liu, **Chuan-Ju Wang**, and Jr-Yan Wang. A Stochastic-Volatility Equity-Price Tree for Pricing Convertible Bonds with Endogenous Firm Values and Default Risks Determined by the First-Passage Default Model. *Journal of Futures Markets*, 42(12), 2103–2134, 2022.

  - Jr-Yan Wang, **Chuan-Ju Wang**, Tian-Shyr Dai, Tzu-Chun Chen, Liang-Chih Liu, and Lei Zhou. Efficient and Robust Combinatorial Option Pricing Algorithms on the Trinomial Lattice for Polynomial and Barrier Options. *Mathematical Problems in Engineering*, Article ID 5843491, 2022.

  - Ting-Hsiang Wang, Hsiu-Wei Yang, Chih-Ming Chen, Ming-Feng Tsai, and **Chuan-Ju Wang***. Item Concept Network: Towards Concept-based Item Representation Learning. *IEEE Transactions on Knowledge and Data Engineering*, 34(3), 1258–1274, 2022.

  - Liang-Chih Liu, Chun-Yuan Chiu, **Chuan-Ju Wang**, Tian-Shyr Dai, and Hao-Han Chang. Analytical Pricing Formulae for Vulnerable Vanilla and Barrier Options. *Review of Quantitative Finance and Accounting*, 58, 137–170, 2022.

  - Jheng-Hong Yang, Sheng-Chieh Lin, Rodrigo Nogueira, Ming-Feng Tsai, **Chuan-Ju Wang***, and Jimmy Lin. Multi-stage Conversational Passage Retrieval: An Approach to Fusing Term Importance Estimation and Neural Query Rewriting. *ACM Transactions on Information Systems*, 39(4), Article No. 48, 2021. (The first two authors contributed equally to this work.)

  - Yi-Cheng Tsai, Mu-En Wu, Jia-Hao Syu, Chin-Laung Lei, Chung-Shu Wu, Jan-Ming Ho, **Chuan-Ju Wang***. Assessing the Profitability of Timely Opening Range Breakout on Index Futures Markets. *IEEE Access*, 7, 32061–32071, 2019.

  - **Chuan-Ju Wang*** and Tian-Shyr Dai. An Accurate Lattice Model for Pricing Catastrophe Equity Put under the Jump-Diffusion Process. *IEEE Computational Intelligence Magazine*, 13(4), 35–45, 2018.

  - Yi-Cheng Tsai, Chin-Laung Lei, William Cheung, Chung-Shu Wu, Jan-Ming Ho, **Chuan-Ju Wang***. Exploring the Persistent Behavior of Financial Markets. *Finance Research Letters*, 24, 199–220, 2018.

  - Ming-Feng Tsai and **Chuan-Ju Wang***. On the Risk Prediction and Analysis of Soft Information in Finance Reports. *European Journal of Operational Research*, 257(1), 243–250, 2017.

- Ming-Feng Tsai, **Chuan-Ju Wang***, and Po-Chuan Chien. Discovering Finance Keywords via Continuous Space Language Models. *ACM Transactions on Management Information Systems*, 7(3), Article No. 7, 2016. (Notable Article of the 21st Annual Best of Computing selected by ACM Computing Reviews)

- Liang-Chih Liu, Tian-Shyr Dai, and **Chuan-Ju Wang***. Evaluating Corporate Bonds and Analyzing Claim Holders' Decisions with Complex Debt Structure. *Journal of Banking and Finance*, 72, 151–174, 2016.

- **Chuan-Ju Wang*** and Ming-Yang Kao. Optimal Search for Parameters in Monte Carlo Simulation for Derivative Pricing. *European Journal of Operational Research*, 249(2), 683–690, 2016.

- **Chuan-Ju Wang**, Tian-Shyr Dai, and Yuh-Dauh Lyuu. Evaluating Corporate Bonds with Complicated Liability Structures and Bond Provisions. *European Journal of Operational Research*, 237(2), 749–757, 2014.

- Tian-Shyr Dai, **Chuan-Ju Wang***, and Yuh-Dauh Lyuu. A Multi-Phase, Flexible, and Accurate Lattice for Pricing Complex Derivatives on Multiple Market Variables. *Journal of Futures Markets*, 33(9), 795–826, 2013.

- Yuh-Dauh Lyuu and **Chuan-Ju Wang***. On the Construction and Complexity of the Bivariate Lattice with Stochastic Interest Rate Models. *Computers and Mathematics with Applications*, 61(4), 1107–1121, 2011. (Authors are listed in alphabetical order.)

- Chun-Ying Chen, Pei-Ju Chou, Jeff Yu-Shun Hsu, Wisely Po-Hong Liu, Yuh-Dauh Lyuu, and **Chuan-Ju Wang***. A Closed-form Formula for an Option with Discrete and Continuous Barriers. *Communications in Statistics – Theory and Methods*, 40(2), 345–357, 2011. (Authors are listed in alphabetical order.)

- Tian-Shyr Dai, **Chuan-Ju Wang**, Yuh-Dauh Lyuu, and Yen-Chun Liu. An Efficient and Accurate Lattice for Pricing Derivatives under a Jump-Diffusion Process. *Applied Mathematics and Computation*, 217(7), 3174–3189, 2010.

- *Conference Papers*

  - Ching-Hsuan Liu, Chih-Ming Chen, Jing-Kai Lou, Ming-Feng Tsai, and **Chuan-Ju Wang**. To appear in *Proceedings of the International Joint Conference on Neural Networks* (IJCNN'24), 2024. (full paper)

  - Chia-Ying Tsao, Chih-Ting Yeh, Roger Jang, Yung-Yaw Chen, and **Chuan-Ju Wang**. Multi-behavior Recommendation with Action Pattern-aware Networks. In *Proceedings of the 22nd IEEE/WIC International Conference on Web Intelligence and Intelligent Agent Technology* (WI-IAT'23), 2023, pp. 16–23. (full paper, acceptance rate: 28%)

  - Jia-Huei Ju, Yu-Shiang Huang, Cheng-Wei Lin, Che Lin, and **Chuan-Ju Wang**. A Compare-and-contrast Multistage Pipeline for Uncovering Financial Signals in Financial Reports. In *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics* (ACL'23), 2023, pp. 14307–14321. (full paper, acceptance rate: 25.2%)

  - Jia-Huei Ju, Sheng-Chieh Lin, Ming-Feng Tsai, **Chuan-Ju Wang**. Improving Conversational Passage Re-ranking with View Ensemble. In *Proceedings of the 46th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR'23), 2023, pp. 2077–2081. (short paper, acceptance rate: 25.12%)

  - Wei-Lun Lou, Jin-Chuan Duan, Ming-Feng Tsai, and **Chuan-Ju Wang**. Multiperiod Corporate Default Prediction – A Domain Knowledge-Tailored Neural Network Approach. *The 32nd European Financial Management Association Annual Meetings* (EFMA'23), 2023. (top conference in finance)

  - Ta-Wei Huang, Jia-Huei Ju, Yu-Shiang Huang, Cheng-Wei Lin, Yi-Shyuan Chiang, and **Chuan-Ju Wang**. FISH: A Financial Interactive System for Signal Highlighting. In *Proceedings of the 17th Conference of the European Chapter of the Association for Computational Linguistics* (EACL'23), 2023, pp. 50–56. (demo paper)

  - Yu-Ting Huang, Hsien-Hao Chen, Tung-Lin Wu, Chia-Yu Yeh, Jing-Kai Lou, Ming-Feng Tsai, and **Chuan-Ju Wang**. CPR: Cross-domain Preference Ranking with User Transformation. In *Proceedings of the 45th European Conference on Information Retrieval* (ECIR'23), 2023, pp. 448–456. (short paper, acceptance rate: 27%)

- Shih-Yang Liu, Hsien Hao Chen, Chih-Ming Chen, Ming-Feng Tsai, **Chuan-Ju Wang**. IPR: Interaction-level Preference Ranking for Explicit Feedback. In *Proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR'22), 2022, pp. 1912–1916. (short paper, acceptance rate: 24.7%)

- Yi-Shyuan Chiang, Yu-Ze Liu, Chen Feng Tsai, Jing-Kai Lou, Ming-Feng Tsai, and **Chuan-Ju Wang**. RecDelta: An Interactive Dashboard on Top-k Recommendation for Cross-model Evaluation. In *Proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR'22), 2022, pp. 3224–3228. (demo paper, acceptance rate: 52%)

- Wei-Lun Luo, Yu-Ming Lu, Jheng-Hong Yang, Jin-Chuan Duan, and **Chuan-Ju Wang**. Multiperiod Corporate Default Prediction Through Neural Parametric Family Learning. In *Proceedings of the 22nd SIAM International Conference on Data Mining* (SDM'22), 2022, pp. 316–324.(full paper, acceptance rate: 27.8%)

- Chih-Hen Lee, Yi-Shyuan Chiang, and **Chuan-Ju Wang**. INForex: Interactive News Digest for Forex Investors. In *Proceedings of the 44th European Conference on Information Retrieval* (ECIR'22), 2022, pp. 300–304. (demo paper, acceptance rate: 55%)

- Chih-Ting Yeh, Zhe-Li Lin, Sheng-Chieh Lin, Jing-Kai Lou, Ming-Feng Tsai, and **Chuan-Ju Wang**. A Learning Framework with Disposable Auxiliary Networks for Early Prediction of Product Success. In *Proceedings of the 20th IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology* (WI-IAT'21), 2021, pp. 186–193. (full paper) (full paper)

- Ting-Wei Lin, Ruei-Yao Sun, Hsuan-Ling Chang, **Chuan-Ju Wang**, and Ming-Feng Tsai. XRR: Explainable Risk Ranking for Financial Reports. In *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases* (ECML-PKDD'21), 2021, pp. 253–268. (full paper, acceptance rate: 29%)

- Yi-Ning Juan, Yi-Shyuan Chiang, Shang-Chuan Liu, Ming-Feng Tsai, and **Chuan-Ju Wang**. HIVE: Hierarchical Information Visualization for Explainability. In *Proceedings of the 30th International Joint Conference on Artificial Intelligence* (IJCAI'21), 2021, pp. 4988–4991. (demo paper, acceptance rate: 24%)

- Jia-Huei Ju, Jheng-Hong Yang, and **Chuan-Ju Wang**. Text-to-Text Multi-view Learning for Passage Re-ranking. In *Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR'21), 2021, pp. 1803–1807. (short paper, acceptance rate: 27.6%)

- Chih-Hen Lee, Chih-Ming Chen, Jun-En Ding, Jing-Kai Lou, Ming-Feng Tsai, and **Chuan-Ju Wang**. LSTPR: Graph-based Matrix Factorization with Long Short-term Preference Ranking. In *Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR'21), 2021, pp. 2222—2226. (short paper, acceptance rate: 27.6%)

- Hao-Lun Lin, Jr-Shian Wu, Yu-Shiang Huang, Ming-Feng Tsai and Chuan-Ju Wang. NFinBERT: A Number-Aware Language Model for Financial Disclosures. In *Proceedings of the 6th Swiss Text Analytics Conference* (SwissText'21), 2021. (short paper)

- Chia-Yuan Chang*, Cheng-Wei Lu*, and **Chuan-Ju Wang**. A Multi-step-ahead Markov Conditional Forward Model with Cube Perturbations for Extreme Weather Forecasting. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence* (AAAI'21), 2021, pp. 6948–6955. (full paper, acceptance rate: 21%, * indicates equal contributions)

- Chia-Yuan Chang*, Hsien-Hao Chen*, Ning Chen*, Wei-Ting Chiang*, Chih-Hen Lee*, Yu-Hsuan Tseng*, Ming-Feng Tsai, and **Chuan-Ju Wang**. Query Expansion with Semantic-based Ellipsis Reduction for Conversational IR. In *Proceedings of the 29th Text REtrieval Conference* (TREC'20), 2020. (* indicates equal contributions) (**The second, third, and fifth place in the automatic response retrieval and fourth place in the manual retrieval.**)

- Jheng-Hong Yang*, Sheng-Chieh Lin*, Rodrigo Nogueira, Ming-Feng Tsai, **Chuan-Ju Wang**, and Jimmy Lin. Designing Templates for Eliciting Commonsense Knowledge from Pretrained Sequence-to-Sequence Models. In *Proceedings of the 28th International Conference on Computational Linguistics* (COLING'20), 2020, pp. 3449–3453. (short paper, oral presentation, acceptance rate: 26.2%, * indicates equal contributions)

– Yu-Neng Chuang*, Chih-Ming Chen*, **Chuan-Ju Wang**, Ming-Feng Tsai, Yuan Fang, and Ee Peng Lim. TPR: Text-aware Preference Ranking for Recommender Systems. In *Proceedings of the 29th ACM International Conference on Information and Knowledge Management* (CIKM'20), 2020, pp. 215–224. (full paper, acceptance rate: 21%, * indicates equal contributions)

– **Chuan-Ju Wang***, Yu-Neng Chuang*, Chih-Ming Chen, and Ming-Feng Tsai. Skewness Ranking Optimization for Personalized Recommendation. In *Proceedings of the 36th Conference on Uncertainty in Artificial Intelligence* (UAI'20), 2020, PMLR 124:400–409. (full paper, acceptance rate: 27.6%, * indicates equal contributions)

– Sheng-Chieh Lin, Wen-Yuh Su, Po-Chuan Chien, Ming-Feng Tsai, **Chuan-Ju Wang**. Self-attentive Sentimental Sentence Embedding for Sentiment Analysis. In *Proceedings of the 45th IEEE International Conference on Acoustics, Speech, and Signal Processing* (ICASSP'20), 2020, pp. 1678–1682.

– Jheng-Hong Yang, Sheng-Chieh Lin, Jimmy Lin, Ming-Feng Tsai, **Chuan-Ju Wang**. Query and Answer Expansion from Conversation History. In *Proceedings of the 28th Text REtrieval Conference* (TREC'19), 2019. (**The first place in the automatic run and the second place in the manual run**)

– Sheng-Chieh Lin, Yu-Neng Chuang, Sheng-Fang Yang, Ming-Feng Tsai, and **Chuan-Ju Wang**. Negative-Aware Collaborative Filtering. In *Proceedings of the 13th ACM Conference on Recommender Systems* (RecSys'19), 2019. (LBR paper, acceptance rate: 31%)

– Chi-Han Du, Ming-Feng Tsai, and **Chuan-Ju Wang**. Beyond Word-level to Sentence-level Sentiment Analysis for Financial Reports. In *Proceedings the 44th IEEE International Conference on Acoustics, Speech, and Signal Processing* (ICASSP'19), 2019, pp. 1562–1566.

– Chih-Ming Chen, **Chuan-Ju Wang**, Ming-Feng Tsai, and Yi-Hsuan Yang. Collaborative Similarity Embedding for Recommender Systems. In *Proceedings of The Web Conference* (formerly known as WWW), 2019, pp. 2637–2643. (short paper, acceptance rate: 20%)

– Zhe-Li Lin and **Chuan-Ju Wang**. Keyword Extraction with Character-level Convolutional Neural Tensor Networks. In *Proceedings of the 23rd Pacific-Asia Conference on Knowledge Discovery and Data Mining Conference on Artificial Intelligence* (PAKDD'19), 2019, pp. 400–413 (full paper, acceptance rate: 24.7%)

– Chun-Hsiang Wang, Kang-Chun Fan, **Chuan-Ju Wang**, and Ming-Feng Tsai. UGSD: User Generated Sentiment Dictionaries from Online Customer Reviews. In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence* (AAAI'19), 2019, pp. 313–320. (top conference in artificial intelligence, full paper, acceptance rate: 16.2%)

– Chi-Han Du, Yi-Shyuan Chiang*, Kun-Che Tsai*, Liang-Chih Liu, Ming-Feng Tsai, and **Chuan-Ju Wang**. FRIDAYS: A Financial Risk Information Detecting and Analyzing System. In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence* (AAAI'19), 2019, pp. 9853–9854. (demo paper, * indicates equal contributions, `https://cfda.csie.org/FRIDAYS/`)

– Kwei-Herng Lai, Chih-Ming Chen, Ming-Feng Tsai, and **Chuan-Ju Wang**. NavWalker: Information Augmented Network Embedding. In *Proceedings of the 2018 IEEE/WIC/ACM International Conference on Web Intelligence* (WI'18), 2018, pp. 9–16. (full paper)

– Jheng-Hong Yang, Chih-Ming Chen, **Chuan-Ju Wang**, and Ming-Feng Tsai. HOP-Rec: High-Order Proximity for Implicit Recommendation. In *Proceedings of the 12th ACM Conference on Recommender Systems* (Recsys'18), 2018, pp. 140–144. (top conference in recommender systems, short paper, oral presentation, acceptance rate: 25%, **best short paper runner up**)

– **Chuan-Ju Wang** and Tian-Shyr Dai. An Accurate Lattice Model for Pricing Catastrophe Equity Put Under the Jump-Diffusion Process. *The 2018 Annual Meeting of the Financial Management Association* (FMA'18), 2018. (top conference in finance, **semifinalist for best paper award**)

– Yu-Wen Liu, Liang-Chih Liu, **Chuan-Ju Wang**, and Ming-Feng Tsai, RiskFinder: A Sentence-level Risk Detector for Financial Reports. In *Proceedings of the 16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies* (NAACL'18), 2018, pp. 81–85. (demo paper, `https://cfda.csie.org/RiskFinder/`)

– Chih-Yu Chao*, Yi-Fan Chu*, Hsiu-Wei Yang, **Chuan-Ju Wang**, and Ming-Feng Tsai. Text Embedding for Sub-Entity Ranking from User Reviews. In *Proceedings of the 26th ACM International Conference on Information and Knowledge Management* (CIKM'17), 2017, pp. 2011–2014. (short paper, acceptance rate: 30%, * indicates equal contributions, `https://cfda.csie.org/tripadvisor/`)

- **Chuan-Ju Wang**, Ting-Hsiang Wang*, Hsiu-Wei Yang*, Bo-Sin Chang, and Ming-Feng Tsai. ICE: Item Concept Embedding via Textual Information. In *Proceedings of the 40th International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR'17), 2017, pp. 85–94. (full paper, acceptance rate: 22%, * indicates equal contributions, `https://github.com/cnclabs/ICE`)

- Yu-Wen Liu, Liang-Chih Liu, **Chuan-Ju Wang**, and Ming-Feng Tsai. FIN10K: A Web-based Information System for Financial Report Analysis and Visualization. In *Proceedings of the 25th ACM Conference on Information and Knowledge Management* (CIKM'16), 2016, pp. 2441–2444. (demo paper, acceptance rate: 34.5%, `https://cfda.csie.org/10K/`)

- **Chuan-Ju Wang**, Tian-Shyr Dai, and Jr-Yan Wang. Pricing Convertible Bonds under the First-Passage Credit Risk Model. *The 2016 Annual Meeting of the Financial Management Association* (FMA'16), 2016. (top conference in finance)

- Tian-Shyr Dai, **Chuan-Ju Wang**, and Liang-Chih Liu. Evaluating Corporate Bonds and Analyzing Market Participants Behaviors with Complex Debt Structure. *The 2015 Annual Meeting of the Financial Management Association* (FMA'15), 2015. (top conference in finance, **best paper award**)

- Ming-Feng Tsai and **Chuan-Ju Wang**. Financial Keyword Expansion via Continuous Word Vector Representations. In *Proceedings of Conference on Empirical Methods in Natural Language Processing* (EMNLP'14), 2014, pp. 1453–1458. (short paper, acceptance rate: 28%).

- Tian-Shyr Dai, **Chuan-Ju Wang**, and Liang-Chih Liu. Evaluating Corporate Bonds with Complex Debt Structure. *The 23rd European Financial Management Association Conference* (EFMA'14), 2014. (top conference in finance)

- **Chuan-Ju Wang and** Ming-Yang Kao. Optimal Search for Parameters in Monte Carlo Simulation for Derivative Pricing. In *Proceedings of the IEEE Conference on Computational Intelligence for Financial Engineering & Economics* (CIFEr'14), 2014, pp. 384–390. (full paper)

- **Chuan-Ju Wang**, Ming-Feng Tsai, Tse Liu, and Chin-Ting Chang. Financial Sentiment Analysis for Risk Prediction. In *Proceedings of the 6th International Joint Conference on Natural Language Processing* (IJCNLP'13), 2013, pp. 802–808. (short paper, acceptance rate: 38%)

- Ming-Feng Tsai and **Chuan-Ju Wang**. Risk Ranking from Financial Reports. In *Proceedings of the 35th annual European Conference on Information Retrieval* (ECIR'13), 2013, pp. 804–807. (short paper, acceptance rate: 30%)

- Ming-Feng Tsai and **Chuan-Ju Wang**. Visualization on Financial Terms via Risk Ranking from Financial Reports. In *Proceedings of the 24th International Conference on Computational linguistics* (Coling'12), 2012, pp. 447–452. (demo paper)

- **Chuan-Ju Wang**, Tian-Shyr Dai, and Yuh-Dauh Lyuu. A Multi-Phase, Flexible, and Accurate Lattice for Pricing Complex Derivatives on Multiple Market Variables. In *Proceedings of the IEEE Conference on Computational Intelligence for Financial Engineering & Economics* (CIFEr'12), 2012, pp. 1–8. (full paper, **best paper award**)

- Tian-Shyr Dai, **Chuan-Ju Wang**, Yuh-Dauh Lyuu. Evaluating Corporate Bonds with General Liability Structures and Bond Covenants under the Jump-Diffusion. *The 2011 Financial Management Association Annual Meeting* (FMA'11), 2011. (top conference in finance)

- **Chuan-Ju Wang**, Tian-Shyr Dai, Yuh-Dauh Lyuu, and Yen-Chun Liu. An Efficient and Accurate Lattice for Pricing Derivatives under a Jump-Diffusion Process. *The 2009 Financial Management Association European Conference* (FMA Euro'09), 2009. (top conference in finance)

- **Chuan-Ju Wang**, Tian-Shyr Dai, Yuh-Dauh Lyuu, and Yen-Chun Liu. An Efficient and Accurate Lattice for Pricing Derivatives under a Jump-Diffusion Process. In *Proceedings of the 24th annual ACM Symposium on Applied Computing* (SAC'09), 2009, pp. 428–432. (full paper, acceptance rate: 29%)

RESEARCH PROJECTS

- Multi-period Event Prediction Through Neural Parametric Family Learning, MOST Research Project (MOST 110-2221-E-001-011-MY3), 2021/08/01-2024/07/31. [PI]

- Financial Unstructured Data Analysis, Understanding, and Applications, MOST Research Project (MOST 107-2628-E-001-006-MY3), 2018/08/01-2021/07/31. [PI]

- A Unified Framework for Processing and Understanding Heterogeneous Data for Intelligent Recommendation, MOST Research Project (MOST 106-3114-E-002-007-, 107-2218-E-002-061-, 108-2218-E-002-054-), 2017/06/01-2020/05/31. [Co-PI]

- Intelligent OTC Trading and Robo-advising System using Multimodal Big-data Analytics and Distributed Blockchain Computation, MOST Research Project (MOST 106-3114-E-009-011-, 107-2218-E-009-052-, 108-2218-E-009-049-, 109-2218-E009-015-), 2017/06/01-2021/05/31. [Co-PI]

- Path-Dependent Financial Instruments Evaluation and Analysis on the Nonlinearity/Approximation Errors (II), MOST Research Project (MOST 106-2221-E-001-003-), 2017/08/01-2018/07/31. [PI]

- Heterogeneous Big Data Embedding for Recommender Systems, MOST Research Project (MOST 106-2221-E-004-009-MY2), 2017/08/01-2019/07/31. [Co-PI]

- Path-Dependent Financial Instruments Evaluation and Analysis on the Nonlinearity/Approximation Errors, MOST Research Project (MOST 105-2221-E-001-035-), 2016/08/01-2017/07/31. [PI]

- Word Sentiment Analysis and Lexicon Expansion via Deep Learning for Financial Risk Predictions, MOST Research Project (MOST 104-2221-E-004-010-), 2015/08/01-2016/07/31. [Co-PI]

- Optimal Search for Parameters in Monte Carlo Simulation with Applications in Finance, MOST Research Project (MOST 102-2221-E-133-001-MY3), 2013/08/01-2016/07/31. [PI]

- Multivariate Lattice Construction and Its Applications, NSC Research Project (NSC 100-2218-E-133-001-MY2), 2011/09/01-2013/10/31. [PI]

INDUSTRIAL PROJECTS

- Dense Information Retrieval and Its Applications, NVIDIA, 2023/11-2024/10. [PI]

- On the Development of Online Advertisement Perdition Models, ClickForce, 2023/01-2023/12. [PI]
精準廣告投遞模型之開發，域動行銷股份有限公司。

- On the Construction of Meta Data of TV and Video On Demand Programs, KKStream, 2021/09-2023/08. [PI]
電視劇及隨選視訊之後設資料建構，科科串流科技股份有限公司。

- Measuring similarity between legal documents based on transformer-based language models, Metaedge, 2021/04-2022/03. [PI]
基於transformer-based之模型的法規相似性比對，捷智商訊科技。

- Artificial Intelligence Research and Its Applications in Finance, E.SUN Commercial Bank, 2019/08-2023/07. [PI]
人工智慧技術研發與其在金融上之應用，玉山銀行。

- On the Construction of the Embedding Space of Titles, Text, and the Meta Data from Crawled Corpus and TV and Video On Demand Recommendation, KKStream, 2018/12-2021/08. [PI]
電視劇及其評論情緒字詞及後設資料之表示式空間建構暨電視劇及隨選視訊之推薦系統建構，香港商科科串流股份有限公司台灣分公司。

- Product Recommendation and Customer Status Prediction Using Customer Profile Data, Cathay Financial Holding Co. Ltd, 2017/08/01-2018/10/31. [PI]
基於客戶歷程資料之產品推薦及客戶未來狀態預測，國泰金控。

- Valuation of zero coupon callable bonds, Taipei Exchange, 2016/10/01-2017/07/31. [Co-PI]
建立美元零息可贖回國際債券公平價格評價模型，財團法人中華民國證券櫃檯買賣中心。

- User Topic Modeling Based on Web Browsing Logs, Appier, 2016/08/01-2017/01/31. [PI]
基於使用者瀏覽網頁資料之文字探勘主題模型，沛星互動科技股份有限公司。

PROFESSIONAL SERVICE

- Consultant

    - ClickForce, 2023/01-2023/12
    - Taiwan Economic Journal (TEJ), 2024/04-2024/12

- Editor

    - IEEE CTSoc News on Consumer Technology (NCT)

- Area Chair/Senior Program Committee (SPC) Members

    - The 29th International Conference on Computational Linguistics (Coling), 2022 [Area Chair]
    - The 36th AAAI Conference on Artificial Intelligence (AAAI), 2022 [SPC]

- TPC/PC Members

    - ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR) (2018, 2019, 2020, 2021, 2022, 2023)
    - AAAI Conference on Artificial Intelligence (AAAI) (2019, 2020, 2021, 2022, 2024)
    - ACM International Web Search and Data Mining Conference (WSDM) (2021, 2022, 2023, 2024)
    - ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD) (2022, 2023, 2024)
    - Annual Meeting of the Association for Computational Linguistics (ACL) (2023)
    - The Web Conference (WWW) (2023, 2024)
    - Conference of the European Chapter of the Association for Computational Linguistics (EACL) (2023)
    - European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD) (2023)
    - Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD) (2024)
    - Workshop on FinTech and Natural Language Processing (FinNLP) (2019, 2020, 2021, 2022, 2023)
    - Conference on Empirical Methods in Natural Language Processing (EMNLP) (Industry Track) (2023)

- Organization Committee

    - Sponsor Chair: International Conference on Technologies and Applications of Artificial Intelligence (TAAI), 2017
    - Registration Chair: International Conference on Database Systems for Advanced Applications (DAF-SAA), 2021
    - Finance Chair: IEEE International Conference on Multimedia & Expo (ICME), 2022
    - Doctoral Consortium Co-Chair: ACM International Web Search and Data Mining Conference (WSDM), 2023
    - Preparation Committee: ACM International Computers and Games Conference (ICGA), 2018

- Reviewers

    - ACM Transactions on the Web
    - ACM Transactions on Information Systems
    - SystemsKnowledge-Based Systems
    - Algorithms
    - Algorithms
    - European Journal of Operational Research
    - Finance Research Letters

- IEEE Computational Intelligence Magazine
- Applied Economics Letters
- Intelligent Systems in Accounting, Finance, and Management
- Conferences: WSDM'24, AAAI'24, ICASSP'24, ICLR'24, WWW'24, EMNLP'23, ECML-PKDD'23, KDD'23, ICML'23, SIGIR'23, ACL'23, FIN-NLP'23, NeurIPS'23, ICML'23, Fin-Web'23, WWW'23, ICLR'23, AISTAT'23, EACL'23, WSDM'23, ICML'23, FinNLP'22, NeurIPS'22, ICML'22, SIGIR'22, KDD'22, EMNLP'22, AISTAT'22, ICLR'21, WSDM'21, NeurIPS'21, EMNLP'21, ICML'21, ACL'21, SIGIR'21, ECONLP'21, NAACL'21, AAAI'21, AAAI-demo'21, NuerIPS'20, IJCAI'20, IJCNLP'20, EMNLP'20, FinNLP'20, ACL'20, SIGIR'20, ICA'20, IJCAI'20, AAAI'20, AAAI-demo'20, FinNLP'19, NAACL-demo'19, IJCAI'19, SIGIR'19, ICA'19, ECONLP'19, AAAI-demo'18, AAAI'18, ACL-ECONLP'18, IJCAI-ECAI'18, NLPCC'17, CIKM'16, WINE'14

- Others

  - Coordinator (2023 – Present)
    TIGP Artificial Intelligence of Things Program (AIoT) (Joint program with National Taiwan University)
  - Academic Committee Member (2021 – Present)
    NTU-Academia Sinica Data Science Degree Program (NTU-Sinica DS)
  - Academic Committee Member (2016 – Present)
    TIGP Social Networks and Human-Centered Computing (Joint program with National Cheng-Hua University and National Cheng-Chi University)

REFERENCES

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