Denghui Zhang

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EDUCATION

Rutgers Business School, Rutgers University, New Jersey, USA　　*Sep. 2018 - Jun. 2023*
- Ph.D. in Information Systems, Rutgers Data Mining Lab
- Advisor: Prof. Hui Xiong, Fellow of IEEE and AAAS
- Thesis Title: From General AI to Specialized AI – Domain Knowledge Inspired Deep Learning

Institute of Computing Technology, Chinese Academy of Sciences, China　　*Sep. 2015 - Jun. 2018*
- M.S. in Computer Science, CAS Key Laboratory of Network Data Science and Technology

University of Science and Technology Beijing, China　　*Sep. 2011 - Jun. 2015*
- B.E. in Electronic Engineering, School of Computer and Electronic Engineering

RESEARCH INTEREST

Artificial intelligence, data mining and natural language processing with applications in business: talent analytics, e-commerce review understanding, fintech, etc.
ML Methodologies: Graph Representation Learning, Text Representation Learning, Reinforcement Learning

PUBLICATIONS

Peer-reviewed Conference and Journal Publications (Accepted)

[21] TKDE　**Multi-Faceted Knowledge-Driven Pre-training for Product Representation Learning**
Denghui Zhang, Yanchi Liu, Zixuan Yuan, Yanjie Fu, Haifeng Chen, Hui Xiong
IEEE *Transactions on Knowledge and Data Engineering*, 2022.

[20] KDD'22　**Towards Learning Disentangled Representations for Time Series**
Yuening Li, Zhengzhang Chen, Daochen Zha, Mengnan Du, Jingchao Ni, **Denghui Zhang**,
Haifeng Chen, Xia Hu.　The 28th ACM *SIGKDD Conference on Knowledge Discovery and Data Mining*, 2022. (14.99% acceptance rate)

[19] CIST'22　**Acqui-hiring or Acqui-quitting: Post-M&A Turnover Prediction via a Dual-fit GNN Model**
Denghui Zhang, Hao Zhong, Jingyuan Yang
INFORMS *Conference On Information Systems And Technology (CIST)*, 2022. (In preparation for *Information Systems Research*)

[18] WDS'22　**AlphaVC: A Reinforcement Learning-based Venture Capital Investment Strategy**
Zixuan Yuan*, **Denghui Zhang***, Hao Zhong, Shengming Zhang, Hui Xiong
INFORMS *Workshop on Data Science 2022.* (* denotes equal contribution. In preparation for *Management Science.*)

[17] KDD'21 **Domain-oriented Language Modeling with Adaptive Hybrid Masking and Optimal Transport Alignment**
Denghui Zhang, Zixuan Yuan, Yanchi Liu, Hao Liu, Fuzhen Z, Hui Xiong, Haifeng Chen
The 27th ACM *SIGKDD Conference on Knowledge Discovery and Data Mining*, 2021. (Research track, 15.4% acceptance rate)

[16] AAAI'22 **Learning to Walk with Dual Agents for Knowledge Graph Reasoning**
Denghui Zhang*, Zixuan Yuan*, Hao Liu, Xiaodong Lin, Hui Xiong
The 36th AAAI *Conference on Artificial Intelligence*, 2021. (Long paper, 15% Acceptance rate)

[15] AAAI'21 **Self-Supervised Prototype Representation Learning for Event-Based Corporate Profiling**
Zixuan Yuan, Hao Liu, Renjun Hu, **Denghui Zhang**, Hui Xiong.
The 35th AAAI *Conference on Artificial Intelligence*, 2021. (Long paper, 21% acceptance rate)

[14] TBD **RPT: Toward Transferable Model on Heterogeneous Researcher Data via Pre-Training**
Ziyue Qiao, Yanjie Fu, Pengyang Wang, Meng Xiao, Zhiyuan Ning, **Denghui Zhang**, Yi Du, Yuanchun Zhou. IEEE *Transaction on Big Data*

[13] ICDM'20 **T^2-Net: A Semi-supervised Deep Model for Turbulence Forecasting**
Denghui Zhang, Yanchi Liu, Wei Cheng, Bo Zong, Jingchao Ni, Zhengzhang Chen, Haifeng Chen, Hui Xiong
The 20th IEEE *International Conference on Data Mining*, 2020. (19.7% acceptance rate)

[12] SIGIR'20 **Spatio-Temporal Dual Graph Attention Network for Query-POI Matching**
Zixuan Yuan, Hao Liu, Yanchi Liu, **Denghui Zhang**, Fei Yi, Nengju Zhu, Hui Xiong
The 43rd ACM SIGIR *International Conference on Research and Development in Information Retrieval*, 2020. (Long paper, 26% acceptance rate)

[11] CIKM'19 **Job2Vec: Job Title Benchmarking with Collective Multi-View Representation Learning**
Denghui Zhang, Junming Liu, Hengshu Zhu, Yanchi Liu, Lichen W, Pengyang W, Hui Xiong
The 28th ACM *International Conference on Information and Knowledge Management*, 2019. (19.7% acceptance rate)

[10] AAAI'18 **Path-Based Attention Neural Model for Fine-Grained Entity Typing**
Denghui Zhang, Manling Li, Pengshan Cai, Yantao Jia, Yuanzhuo Wang
The Thirty-Second AAAI *Conference on Artificial Intelligence*, 2018. (Abstract paper)

[9] WI'17 **Efficient Parallel Translating Embedding For Knowledge Graphs**
Denghui Zhang, Manling Li, Yantao Jia, Yuanzhuo Wang, Xueqi Cheng
The IEEE/WIC/ACM *International Conference on Web Intelligence*, 2017. (Long paper)

[8] TBD **Link Prediction in Knowledge Graphs: A Hierarchy-Constrained Approach**
Manling Li, **Denghui Zhang**, Yantao Jia, Yuanzhuo Wang, Xueqi Cheng
IEEE *Transaction on Big Data Special Issue on Knowledge Graphs*, 2017.

Working Papers

[7] ISR   **Acqui-hiring or Acqui-quitting: Post-M&A Turnover Prediction via a Dual-fit GNN Model**
Denghui Zhang, Hao Zhong, Jingyuan Yang
Information Systems Research. (In preparation). Accepted by *CIST 2022, WITS 2022* and INFORMS *Workshop on Data Science 2022.*

[6] MNSC   **AlphaVC: A Reinforcement Learning-based Venture Capital Investment Strategy**
Zixuan Yuan*, **Denghui Zhang***, Hao Zhong, Shengming Zhang, Hui Xiong
Management Science (In preparation). Accepted by INFORMS *Workshop on Data Science 2022.*
(* denotes equal contribution.)

[5] ICDE'23   **Variation-aware E-commerce Product Linkage with Mix-supervised Pre-training**
Denghui Zhang, Zhengyang Wang, Pengyang Wang, Yanjie Fu, Zixuan Yuan, Hui Xiong
IEEE International Conference on Data Engineering, 2023. (**Major Revision**)

[4] TKDE   **LEVER: Online Adaptive Sequence Learning Framework for High-Frequency Trading**
Zixuan Yuan, Junming Liu, Haoyi Zhou, **Denghui Zhang**, Hao Liu, Nengjun Zhu, Hui Xiong
IEEE *Transactions on Knowledge and Data Engineering*, 2022. (**Major revision**)

[3] AAAI'23   **Interpretable Event-Driven Financial Forecasting with Online Knowledge Distillation**
Zixuan Yuan, Hao Liu, Renjun Hu, **Denghui Zhang**, Peter Hafez, Xiaodong Lin, Hui Xiong
The 37th AAAI *Conference on Artificial Intelligence*, 2023. (Under review)

[2] AAAI'23   **Human-instructed Deep Hierarchical Generative Learning for Automated Urban Planning**
Dongjie Wang, Lingfei Wu, **Denghui Zhang**, Jingbo Zhou, Leilei Sun, Yanjie Fu
The 37th AAAI *Conference on Artificial Intelligence*, 2023. (Under review)

[1] AAAI'23   **Self-Paced Unified Representation Learning for Hierarchical Multi-Label Classification**
Zixuan Yuan, Hao Liu, Haoyi Zhou, **Denghui Zhang**, Xiao Zhang, Hao Wang, Hui Xiong
The 37th AAAI *Conference on Artificial Intelligence*, 2023. (Under review)

Patents

US Patent   **Multi-Faceted Knowledge-Driven Pre-training for Product Representation Learning**
17584638   Yanchi Liu, Bo Zong, Haifeng Chen, Xuchao Zhang, **Denghui Zhang** (first student author)

US Patent   **Semi-supervised Deep Model for Turbulence Forecasting**
17165515   Yanchi Liu, Jingchao Ni, Bo Zong, Haifeng Chen, Zhengzhang Chen, Wei Cheng,
Denghui Zhang (first student author)

US Patent   **Multi-scale Multi-granularity Spatial-temporal Traffic Volume Prediction**
17003112   Yanchi Liu, Wei Cheng, Bo Zong, LuAn Tang, Haifeng Chen, **Denghui Zhang** (first student author)

HONORS & AWARDS

- **Dean's Dissertation Fellowship at Rutgers University**
- Student Scholarship from INFORMS Workshop on Data Science
- Freshman Scholarship at Chinese Academy of Sciences (Top 10%)
- Excellent Student Awards at Chinese Academy of Sciences (Top 15%)
- National Scholarship (Top 2%) (the most prestigious scholarship in China)
- National Motivational Scholarship (Top 5%)
- Excellent Student Awards at University of Science and Technology Beijing (Top 5%)

PROFESSIONAL EXPERIENCES

Product Graph Team, Amazon Science, Applied Scientist Intern *May-August 2021*

- Mix-supervised pre-training for variation-aware entity linkage: Proposed a mix-supervised pre-training framework and delivered a pre-trained e-commerce domain language model, which is less label-intensive and can be easily fine-tuned to detect both duplicate (i.e., exact match) and variation entities.

Data Science Department, NEC Laboratories America, Research Intern *May-August 2020*

- Deep contextualized product semantic learning: Proposed to adapt language model pre-training to the scenario of product matching, product search, etc., enhancing language modeling of product domain with product knowledge.

Data Science Department, NEC Laboratories America, Research Intern *May-August 2019*

- Spatiotemporal traffic volume prediction: Proposed Spatial-Temporal Multi-Scale Multi-Granularity Network (ST-MSGN) for site-level traffic volume prediction, by modeling the complex spatial and temporal dependencies and their interactions. Conduct experiments on real-world datasets (NYC-Bike and NYC-Taxi) to validate the effectiveness of the model.

Baidu Talent Intelligence Center, Research Intern *June-August 2018*

- Resume distribution: Developed resume recommender system for Baidu HR department, using NLP techniques to obtain the resume-job similarities and distribute resumes according to similarity scores and the headcount of different departments.
- Job title benchmarking: Developed a data-driven approach to match job titles with similar expertise levels across various companies.

TEACHING EXPERIENCES

Course Lecturer at Rutgers University

- 29:623:335:01, Data Warehousing & Data Mining (31 students), Spring 2022
- Hybrid teaching (in-person and zoom).
- Teaching Effectiveness Evaluation: **4.53/5** (department average score 4.29/5).

Teaching Assistant at Rutgers University

- 29:623:345:01, Cyber Security, Fall 2021, Spring 2022
- 29:623:335:01, Data Warehousing & Data Mining, Spring 2021
- 33:136:485:02, Time Series Model, 2020 Fall

PROFESSIONAL SERVICES

Session Chair

- The 28th ACM SIGKDD Conference (2022)
  Session of "Graph Learning and Social Networks"
- INFORMS Annual Meeting (2022)
  Session of "AI-driven Business Analytics: New Advances and Applications"

Program Committee Member

- AAAI Conference on Artificial Intelligence (AAAI), 2022, 2021.
- ACM Conference on Knowledge Discovery and Data Mining (SIGKDD), 2022, 2021.
- International Joint Conference on Artificial Intelligence (IJCAI), 2022, 2021.
- Association for Computational Linguistics (ACL) Rolling Review, 2022, 2021.
- ACM International Conference on Web Search and Data Mining (WSDM), 2022, 2021.
- International Conference on Information and Knowledge Management (CIKM), 2020
- International Conference on Information Systems (ICIS), 2022
- Pacific Asia Conference on Information Systems (PACIS), 2022
- The Workshop on Information Technologies and Systems (WITS), 2022

Journal Reviewer

- Transactions on Management Information Systems (TMIS), 2022
- Journal of Electronic Commerce Research and Applications (ECRA), 2022
- IEEE Transactions on Knowledge and Data Engineering (TKDE), 2019

SKILLS

Language	Python, C/C++, Java, Scala, MySql, Shell, Matlab
Tools	PyTorch, Tensorflow, Keras, Spark MLlib, Sklearn, Pandas

REFERENCES

- Hui Xiong (advisor), Distinguished Professor
  Rutgers Business School, Rutgers University
  hxiong@rutgers.edu

- Guiling Wang, Distinguished Professor
  New Jersey Institute of Technology
  guiling.wang@njit.edu

- Thomas Lidbetter, Associate professor
  Rutgers Business School, Rutgers University
  tlidbetter@business.rutgers.edu