# Rong Jin

*Curriculum Vitae*

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## Research Interests

My research interests are in Data Science and Machine Learning, including data-driven computation and optimization in online social networks analysis. In addition, I am interested in interactive Multimedia Systems for STEM education, with emphasises in 3D tele-immersion virtual reality system, scaffolded learning system, and evaluation study for maximizing quality of user experience.

## Education

2015 – Now **Ph.D. Candidate Computer Science**, *University of Texas at Dallas*
Advisor: *Dr. Weili Wu*
Research areas: *Data Science, Social Networks, Multimedia Systems, STEM education*

2013 – 2015 **M.S. Computer Science**, *University of Texas at Dallas*

2007 – 2011 **B.Eng. Communications Engineering**, *Nanjing University of Posts & Telecommunications*
Thesis title: *Interface Design for FFT sequential and parallel computing*
Advisor: *Prof. Ming Zhang*

## Honors and Awards

2019 ACM SIGSIM-PADS Student Travel Grant

2017 2017 Grace Hopper Conference (GHC'17) Scholarship

2017 2017 CRA-W Graduate Cohort Scholarship

2012-2015 Cisco CCNA Certificate in Routing & Switching (CSCO12429154)

2007 - 2011 Academic Performance Fellowship (2nd, 3rd Prizes)

## Publications

*1 book chapter, 2 refereed journal papers, 5 full refereed papers (4 conference, 1 workshop)*

Book Chapter **Rong Jin**, Weili Wu, My T. Thai, and Ding-Zhu Du. 2020. Black Box and Data-Driving Computation. In Book *Black Box Optimization, Machine Learning and No-Free Lunch Theorems*, Springer, Cham. (To appear)

JOCO Qiufen Ni, Smita Ghosh, Chuanhe Huang, Weili Wu, and **Rong Jin**. Discount allocation for cost minimization in online social networks. submitted to the *Journal of Combinatorial Optimization (JOCO)*. (under review).

TKDD Baokun He, Guihong Wan, **Rong Jin**, and Haim Schweitzer. The Bias Method for Robust Centered Principal Component Analysis. submitted to the *ACM Transactions on Knowledge Discovery from Data (TKDD)*, April 2020. (under review).

COCOA'20 Shengminjie Chen, Wenguo Yang, Suixiang Gao, and **Rong Jin**. Novel algorithms for maximum DS decomposition. submitted to *The 14th Annual International Conference on Combinatorial Optimization and Applications (COCOA'20)*, Dallas, Texas, USA, December 11-13, 2020. (under review).

SIGSIM-PADS'19 Midori Kitagawa, Paul Fishwick, Michael Kesden, Mary Urquhart, Rosanna Guadagno, **Rong Jin**, Ngoc Tran, Erik Omogbehin, Aditya Prakash, Priyanka Awaraddi, Baily Hale, Ken Suura, Aniket Raj, James Stanfield, and Henry Vo. Scaffolded Training Environment for Physics Programming (STEPP): Modeling High School Physics using Concept Maps and State Machines. *In proceedings of the 2019 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation (SIGSIM-PADS'19)*, Pages 127–136, Chicago, Illinois, USA, June 3-5, 2019. ***(Oral)***

IWISC'18 Lakshmi Sharma, **Rong Jin**, Balakrishnan Prabhakaran, and Murry Gans. LearnDNA: An Interactive VR Application for Learning DNA Structure. *In proceedings of the 3rd International Workshop on Interactive and Spatial Computing (IWISC'18)*, Pages 80-87, Richardson, Texas, USA, April 12 -13, 2018. ***(Oral)***

ISM'17 Kevin Desai, Suraj Raghuraman, **Rong Jin**, and Balakrishnan Prabhakaran. QoE Studies on Interactive 3D Tele-Immersion. *2017 IEEE international symposium on multimedia (ISM 2017)*, Pages 130-137, Taichung, Taiwan, Dec. 11 -13 2017. ***(Oral)***

BigMM'17 Kevin Desai, Uriel Haile Hernndez Belmonte, **Rong Jin**, Balakrishnan Prabhakaran, Paul Diehl, Victor Ayala Ramirez, Vinu Johnson, and Murry Gans. Experiences with Multi-Modal Collaborative Virtual Laboratory (MMCVL). *2017 IEEE Third International Conference on Multimedia Big Data (BigMM 2017)*, Pages 376-383, Laguna Hills, California, USA, April 2017. ***(Oral)***

## Research Experiences

3/2020 – Now **Research Assistant**, *Data Communication and Data Management Lab.*
(publication work is ongoing.)

Working on rumor source detection in online social networks using mathematical methods in data science, optimization, approximation algorithms and machine learning.

9/2019 – 3/2020 **Research Assistant**, *Computer Vision and Data Lab.*
(For references see paper TKDD)

Worked on feature extraction with big data using numerical methods and statistical tools including PCA, CSS and randomized algorithms analysis for big sparse data.

01/2018 – 08/2019 **Research Assistant**, *Creative Automata Lab.*
STEPP project: Learning Physics in a Synergistic Scaffolded Programming Environment (**NSF No.1741756**)
(For references see paper SIGSIM-PADS'19 and `https://stepp.utdallas.edu/`)

Part of my research work was modeling, developing and implementing STEPP environment system:
• Worked on the the development of the in-house built physics system using Unity game engine.
• Worked closely with the UX team to improve the functionality and experience of the application and deliver results within the stipulated deadline.
• I am also one of contributors to project VIGOR.

12/2016 – 12/2017 **Research Assistant**, *Multimedia Systems Lab.*
(For references see papers BigMM'17, ISM'17, IWISC'18, and Demos URLs below)

Part of my research was proposing and developing a Multimodal Collaborative Virtual Laboratory (MMCVL) system that is extended from Multi-modal 3D tele-immersion project. I conducted projects about STEM-domain scaffolded 3D immersive virtual learning environment which assists community college students to learn theoretical or experimental concepts (i.e. How to read a meniscus; How to use hydrometer; Leaning RNA transcription and translation processes) in virtual collaborative chemistry/biology lab. All of projects are built on Unity game engine and TIGER (Tele-Immersive Gaming Environment and Resources) system from Multimedia Systems Lab, which facilitates virtual collaboration among a distributed set of humans by using 3D cameras such as Microsoft Kinect. Projects may also apply with Oculus rift, MYO armband, and Leap Motion gesture tracking. The data management server is using SQLite and WAMP. The interface between users and VR system is using HTML webpage for logging in.

1. **How to read a meniscus**
   - Two experiments demos:
     *Experiment 1*, *Experiment 2*
2. **How to use Hydrometer**
   - Kinect + Myo Armband Version:
     *Demo*
   - Oculus Rift + Leap Motion Version:
     *Demo*
3. **Learning RNA transcription and translation processes**
   *Demo*

08/2016 – 12/2016 **Research Assistant**, *Institute for Data Analytics*.
E-PLAN: Emergency Response Information System for first responders in US.

Part of my research work was upgrading E-PLAN Real-Time Chemical Plume Mapping & Geographic Information Reporting System with new versions Google Maps API and weather retriever API.

## Presentations

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| Poster | STEPP presented at Integrating Computational Thinking Conference, College Park, MD, May 2019 |
| Poster | Leveraging UTeach Dallas Outreach to Test Interactive Unity-Based Simulations for Physics Education 2018 |
| Demo | International Workshop on Interactive and Spatial Computing (IWISC) 2018 |
| Demo | DCCCD STEM Summit 2017 |

## Teaching Experiences

**Teaching Assistant**

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|---|---|
| Summer2020 | CS 6364 Artificial Intelligence |
| Spring 2020 | CS 4391 Introduction to Computer Vision<br>CS 6384 Computer Vision |
| Fall 2019 | CS 4384 Automata Theory |
| Fall 2017 | CS 4332 Introduction to Programming Video Games |
| Spring 2017 | CS 3376 C/C++ Programming in a UNIX Environment<br>CS/STAT 6301 – R for Data Scientists |
| Summer2016 | CS/STAT 6301 Advanced Computational Methods for Data Science |

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| Spring 2016 | CS/STAT 6301 Advanced Computational Methods for Data Science |
| Fall 2015 | CS 6363 Design and analysis of Computer Algorithms |
| | **Grader** |
| Summer 2015 | CS 4375 Introduction to Machine Learning<br>CS 6375 Machine Learning |
| Spring 2015 | CS 4391 Introduction to Computer Vision<br>CS 6384 Computer Vision |

## Mentoring

*Mentored the projects of **four** graduate students and **one** undergraduate student.*

- Bryant Nguyen (BS, UT Dallas)
- Lakshmi Sharma (MCS, UT Dallas, co-authored [IWISC'18])
- Scott Fontenarosa (MCS, UT Dallas)
- David Butler (MCS, UT Dallas)
- Hiranya Garbha Kumar (MCS, UT Dallas)

## Professional Service

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| Reviewer | Theoretical Computer Science(TCS) 03/2020 – Present<br>Discrete Mathematics, Algorithms and Application (DMAA) 03/2020 – Present<br>IEEE Transactions on Multimedia (TMM) 03/2016 – Present<br>Simulation: Transaction of the Society for Modeling and Simulation International 2019 |
| Sub-Reviewer | ITCAI 2019 |
| Memberships | Graduate Student Member for IEEE 01/2017 – Present |
| | Graduate Student Member for ACM, ACM_W & SIGMM 02/2017 – Present |
| | Graduate Student Member for ACM SIGSIM, 03/2019 – Present |

## Technical Skills

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| Proficient | Python, Numpy, SciPy, Sklearn, Pandas, SQL, DBMS, LaTeX |
| Familiar | Tensorflow, C#, C++, HTML, CSS, JavaScript |
| Applications | Git, AWS, Game Engine |
| OS | Linux, Windows, MacOS |

## Industry Experience

2011 – 2012 **Software Engineer in Test**, *Infosys*, Shanghai, China.

## Professional References

Available upon request.