Kaiqun Fu
Assistant Professor
Department of EECS
South Dakota State University
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Faculty Recruiting Committee
Department of Computer Science
College of Engineering and Computer Science
Texas A&M University Corpus Christi

April 5, 2025

Dear Search Committee,

I am writing to express my interest in the Tenure-Track Assistant Professor role in the Department of Computer Science that you advertised on HigherEdJobs. Through my research on the Department of Computer Science at Texas A&M University Corpus Christi, I firmly believe that the culture of innovation makes your department an academic leader. I am confident that my extensive background in mentoring PhD students and teaching Machine Learning-related courses aligns seamlessly with the requirements of this position. Furthermore, my research expertise in data science, artificial intelligence, machine learning, and natural language processing, coupled with my proficiency in securing grants, will serve to enhance and diversify the existing skill set within the department.

I received my Ph.D. in Computer Science from Virginia Tech in May 2021. The subject of my dissertation was spatiotemporal event prediction and analysis with urban data. Currently, I am a Tenure-Track Assistant Professor of Computer Science at South Dakota State University, focusing on research problems in spatiotemporal event forecasting with social media, interpretable machine learning solutions for intelligent transportation systems, and environment perception from street view. I believe my research interests and contributions in geospatial data mining, machine learning, and AI align well with the focus of the Department of Computer Science at Texas A&M University Corpus Christi.

As a Principal Investigator (PI) and Co-Principal Investigator (Co-PI), I have been actively pursuing external and internal research funding. My work is supported by multiple federal agencies, including the National Science Foundation (*NSF*) and the National Aeronautics and Space Administration (*NASA*). This includes *NSF*'s *CRII* from *CISE*, *NSF*'s *PBI* from *TIP*, and *NASA*'s *AIST* program. As PI/Co-PI, I have secured a total of $937K in funding, with **my share amounting to $574K**. The **total awards** I have contributed to securing **exceed $1.7M**. Through these projects, I have made remarkable progress and developed new approaches for social event forecasting, traffic impact prediction, and urban safety perception. So far, my research has resulted in **over 30 top-tier peer-reviewed publications**, many of which have been published in prestigious conference proceedings and journals, including *AAAI*, *IJCAI*, *TKDD*, *ACM SIGSPATIAL*, *SIAM Data Mining*, *IEEE BigData*, and *ACM/IEEE ASONAM*.

Over the years, I have developed extensive experience in teaching computer science courses. My journey in education began in 2015 as a teaching assistant at Virginia Tech, focusing on *Database Management Systems*. This role was instrumental in enhancing my teaching abilities and communication skills. In 2021, I joined South Dakota State University as an Assistant Professor,

where I had the opportunity to create and teach three graduate courses: *Design and Analysis of Computer Algorithms*, *Spatial Data Mining* and *Introduction to Machine Learning*. These experiences not only further honed my teaching and communication skills but also bolstered my confidence in educational roles. I am willing and confident to teach any undergraduate or graduate course assigned to me, leveraging my expertise and adaptability to meet the needs of the Department of Computer Science at Texas A&M University Corpus Christi effectively. I have had the privilege of mentoring 13 students, including 4 Ph.D. candidates, 5 master's students, 2 undergraduates, and 2 high school students, guiding them to significant academic progress. I am confident that my extensive mentoring background will contribute to and strengthen the department's existing capabilities.

In addition to my research and teaching experience, I have a strong track record of university-level and professional service. I began serving as the Graduate Coordinator for the Department of Electrical Engineering and Computer Science (EECS) in Fall 2024, taking on a leadership role in managing graduate programs and supporting the academic and professional development of students. Additionally, I have contributed as a member of the Assistant Professor Search Committee and the Undergraduate Curriculum Committee within the EECS department, as well as the Research Council at the college level. These roles have allowed me to shape departmental and institutional priorities, further showcasing my commitment to the broader academic mission. As for the professional service, I have served as panelist for the NSF and as PC member for prestigious conferences, including the International Joint Conference on Artificial Intelligence (*IJCAI*), the IEEE International Conference on Big Data, and the IEEE International Conference on Intelligent Transportation Systems (*ITSC*). Furthermore, I am an active reviewer for top-tier journals such as ACM Transactions on Knowledge Discovery from Data (*TKDD*), IEEE Transactions on Pattern Analysis and Machine Intelligence (*TPAMI*), IEEE Transactions on Artificial Intelligence (*TAI*), and ACM Transactions on Intelligent Systems and Technology (*TIST*), among others. These contributions demonstrate my dedication to advancing my field and fostering collaboration within the research community.

As requested, I have submitted a completed job application along with my curriculum vitae, research and teaching statements, and the information of my references. If you require any further information, please feel free to contact me by email at fukaiqun@gmail.com or by phone at +1 (571) 303-8419 .

Sincerely yours,

Kaiqun Fu

Kaiqun Fu

Curriculum Vitae

Department of EECS
South Dakota State University
(+1) 571-303-8419
fukaiqun@gmail.com
Kaiqun Fu's Webpage
Google Scholar *Github* *Linkedin*

Professional Experience

8/2021-present **Assistant Professor (tenure-track)**, *Department of Electrical Engineering and Computer Science*, South Dakota State University, Brookings, SD.

2017-2021 **Graduate Research Assistant**, *Sanghani Center for Artificial Intelligence and Data Analytics*, Virginia Tech, Arlington, VA.

2016 **Research Intern**, *District Department of Transportation*, Washington, D.C..

Education

2021 **Ph.D., Computer Science**, *Virginia Tech*, Falls Church, VA, Advisor:*Chang-Tien Lu*.
Topic:*Spatiotemporal Event Forecasting and Analysis with Ubiquitous Urban Sensors*

2016 **Master of Science, Computer Science**, *Virginia Tech*, Falls Church, VA.

2012 **Bachelor of Science, Electrical Engineering**, *Hangzhou Dianzi University*, Hangzhou, China.

Grants and Awards (my share awarded as PI and Co-PI: $574K; total awarded: $1.72M)

Awarded

2024 Awarded Co-Principal Investigator: "Time series multi-modal foundation model for near-real-time land surface dynamics characterization in support of ESDT," Sponsored by **National Aeronautics & Space Administration (NASA)**, Principal Investigator – Hankui Zhang, Co-Principal Investigator - Xiaoyang Zhang; Grant No. 23-AIST23-0106, Dec. 1, 2024 to May 31, 2026, Amount: $462,516

2024 Awarded Principal Investigator: "EAGER: PBI: Collaboration Patterns and Socio-Economic Impacts Analysis in Emerging Science and Technology with Machine Learning Algorithms," Sponsored by **National Science Foundation (NSF)**, Co-Principal Investigators – Taoran Ji, Grant No. NSF-2431845, Sep. 1, 2024 to Aug. 31, 2026, Amount: $300,000

2024 Awarded Principal Investigator: "Spatiotemporal Graph Attention Network for Location Representation Learning," Sponsored by **SDSU Office of Academic Affairs and Office of Research and Economic Development: Research, Scholarship and Creative Activity (RSCA) Challenge Fund FY2025**, Co- Principal Investigators – Hankui Zhang, May 1, 2025 to Aug. 31, 2025, Amount: $10,118.

2023 Awarded **Sole** Principal Investigator: "CRII: IIS: III: Learning Spatiotemporal Impacts of Text-enriched Traffic Events with Injection of Interpretability from Graph Neural Networks and Physics-Informed Machine Learning," Sponsored by **National Science Foundation (NSF)**, Grant No. NSF-2348443, Aug. 1, 2024 to Jul. 31, 2026, Amount: $174,734.

2023 Awarded Co-Principal Investigator: "Collaborative Research: RII Track-2 FEC: STORM: Data-Driven Approaches for Secure Electric Grids in Communities Disproportionately Impacted by Climate Change," Sponsored by **National Science Foundation (NSF)**, Principal Investigator – Tim Hansen, Senior Personnel – Hossein Moradi, Kwanghee Won, Michael Puthawala, Mostafa Tazarv, Jeffrey Doom, and Aritra Banerjee, Grant No. NSF-2316400, Sep. 15, 2023 to Aug. 31, 2027, Award: $750,000.

2023 Awarded Co-Principal Investigator: "Analyzing Deaths of Despair Determinants in Rural Areas with Spatiotemporal Considerations," Sponsored by **SDSU Office of Academic Affairs and Office of Research and Economic Development: Seeding Partnerships to Advance Research Collaborations (SPARC) Challenge Fund FY2023**, Jul. 1, 2023 to Jun. 30, 2024, Award: $12,000.

2022 Awarded Co-Principal Investigator: "Design of Neural Ordinary Differential Equations for Increasing Electricity Grid Resilience," Sponsored by **SDSU Office of Academic Affairs and Office of Research and Economic Development: Research, Scholarship and Creative Activity (RSCA) Challenge Fund FY2022**, Principal Investigator – Tim Hansen, Jul. 1, 2022 to Jun. 30, 2023, Award: $12,468.

2022 Awarded Collaborator: "REU Site: Promoting Leadership in Advanced-Research-Computing for INterdisciplinary Sectors (PLAINS)," Sponsored by **National Science Foundation (NSF)**, Principal Investigator – Stephen Gent, Co-Principal Investigator – Jung-Han Kimn, Apr. 1, 2020 to Mar. 30, 2025, Award: $400,731.

Pending & Not Awarded

2024 Principal Investigator: "Collaborative Research: Landcover Change Inferencing with Large Scale Textual and Geographical Data," submitted to **National Science Foundation (NSF)**, Co-Principal Investigators – Hankui Zhang, Sep. 1, 2024 to Aug. 31, 2027, Amount: $361,000. SDSU (lead) portion of a $600,000 collaboration with Texas A&M University-Corpus Christi

2024 Co-Principal Investigator: "Collaborative Research: Analyzing Urban Surface Anomalies: Machine Learning-driven Detection and Geo-Environmental Causal Inference," submitted to **National Science Foundation (NSF)**, Sep. 1, 2024 to Aug. 31, 2027, Amount: $175,000. SDSU sub-contract of a $600,000 collaboration with Texas A&M University-Corpus Christi.

2024 Co-Principal Investigator: "Undergraduate Research in Achieving Net-Zero Emissions for Scramjet Engines: A Sustainable Future in Aerospace Engineering," submitted to from **SDSU Office of Academic Affairs and Office of Research and Economic Development: Research, Scholarship and Creative Activity (RSCA) Challenge Fund FY2025**, Principal Investigator – Jeffrey Doom, Co-Principal Investigator – Jung-Han Kimn, Jul 1, 2024 to Jun. 30, 2025, Amount: $6,545.

2024 Co-Principal Investigator: "BEST-CASE: Bringing Water-Food Equity and Security Toward Climate-Adaptive Under-Served Communities," submitted to **National Science Foundation (NSF)**, Principal Investigator – Weiwei Zhang, Senior Personnel – Everhardus Van der Sluis, Abigail Tobias- Lauerman, Aug 1, 2024 to Jul. 31, 2028, Amount: $5,999,634.

2024 **Sole** Principal Investigator: "Introducing Large Language Models to Human-comprehensible Agribusiness Market Forecasting Systems," submitted to **National Institute of Food and Agriculture, Agriculture and Food Research Initiative - Foundational and Applied Science Program (NIFA-AFRI)**, Co-Principal Investigator – Tong Wang, Jun. 1, 2024 to May 31, 2026, Amount: $299,999.

2024 Co-Principal Investigator: "Artificial Intelligence (AI)-Powered Colorimetric Tuning Fork Sensor Array for Halitosis Diagnosis," submitted to **National Institutes of Health (NIH)**, Principal Investigator – Xiaojun Xian, Apr. 1, 2024 to Mar. 31, 2026, Amount: $428,765.

2023 Co-Principal Investigator: "The Socio-Economic And Mental Health Impacts Of Covid-19 And Mitigation Efforts On American Indian Populations," submitted to **National Institutes of Health (NIH)**, Principal Investigator – Deepthi Kolady, Co-Principal Investigator – Weiwei Zhang, Aug. 1, 2024 to Jul. 31, 2029, Amount: $657,071. SDSU sub-contract of a $2M collaboration with Oklahoma State University.

2023 Co-Principal Investigator: "Artificial Intelligence (AI)-Powered Colorimetric Tuning Fork Sensor Array for Halitosis Diagnosis," submitted to **National Institutes of Health (NIH)**, Principal Investigator – Xiaojun Xian, Jun. 2023, Amount: $383,114.

2023 Principal Investigator: "AgInsight: Introducing Interpretability to Natural Language Models for Agribusiness Market Forecasting with News Articles," submitted to South Dakota **Board of Regents Competitive Research Grant Program**, Feb. 2023, Amount: $174,734.

2023 Co-Principal Investigator: "Collaborative Research: Optimization of Electrical Vehicle Charging Station Dispersion in Rural, Mountainous, and Cold Climate Jurisdictions to Maximize Equity and Economic and Social Sustainability," submitted to **National Science Foundation (NSF)**, Principal Investigator – Hossein Moradi, Co-Principal Investigators – Tim Hansen, Jan. 2023, Amount: $551,374.

2023 Co-Principal Investigator: "NEH-DHAG: Linking Mapping and Meaning: A Digital Exploration of Women's Historical Land Ownership," submitted to **National Endowment for the Humanities (NEH)**, Principal Investigator – Weiwei Zhang, Co-Principal Investigators – Dapeng Li, Lisa Lindell, Gwen Mc- Causland, Jan. 2023, Amount: $149,729.

2022 Principal Investigator: "A Novel Physics-informed Neural Flow Method for Solving Scientific Differential Equations," submitted to submitted to **National Science Foundation (NSF)**, Co-Principal Investigators – Jeffrey Doom, Jung-Han Kimn, Nathan McClanahan, Sept. 2022, Amount: $431,365.

2022 Co-Principal Investigator: "The socio-economic and mental health impacts of COVID-19 and mitigation efforts on American Indian populations," submitted to **National Institutes of Health (NIH)**, Principal Investigator – Deepthi Kolady, Co-Principal Investigators –Weiwei Zhang, Jun. 2022, Amount: $2,793,988.

2022 Senior Personnel: "AI-based Optimization of Regenerative Agricultural Practices, Reducing and Verifying GHG Emissions, while Improving Profitability," submitted to **National Science Foundation (NSF)**, Principal Investigator – Ali Nafchi, Co-Principal Investigators – Kwanghee Won, Ekaterina Koromyslova, Maimaitijiang Maitiniyazi, TongWang, Kristopher Osterloh, Sutie Xu, Songxin Tan, John McMaine, May 2022, Amount: $11,851,227.

2022 Principal Investigator: "Machine Learning-powered Socioeconomical and Technological Trends Forecasting," submitted to **Board of Regents Competitive Research Grant Program**, Co-Principal Investigator – Kwanghee Won, Apr. 2022, Amount: $89,939.

2022 Co-Principal Investigator: "The socio-economic and mental health impacts of COVID-19 and mitigation efforts on American Indian populations," submitted to **SDSU Office of Academic Affairs and Office of Research and Economic Development: Research, Scholarship and Creative Activity (RSCA) Challenge Fund FY2023**, Principal Investigator – Weiwei Zhang, Co-Principal Investigator – Deepthi Kolady, Mar. 2022, Amount: $14,729.

2022 Co-Principal Investigator: "Convergence Research On Precision Agriculture Innovations (CROP AI)," submitted to **National Science Foundation (NSF)**, Principal Investigator – Senthil Subramanian, Jan. 2022, Amount: $6,000,002.

2022 Co-Principal Investigator: "NSF-ATD: Statistical and Machine Learning Algorithm for Massive Correlated Data," submitted to **National Science Foundation (NSF)**, Co-Principal Investigators – Jung-Han Kimn, Feb. 2022, Amount: $526,251.

2022 Principal Investigator: "Collaborative Research: HEGS: Understanding Human Behavior from Physical Environment: A 3D Fine-grained Approach," submitted to **National Science Foundation (NSF)**, Feb. 2022, Amount: $66,247. SDSU sub-contract of a $399,995 collaboration with Mississippi State University.

2022 Principal Investigator: "Enabling Interdisciplinary Collaboration: Automating Large-Scale Cyberbullying Analysis: Bridging Social Science Theories and Machine Learning," submitted to **National Science Foundation (NSF)**, Feb. 2022, Amount: $99,694. SDSU sub-contract of a $299,992 collaboration with Mississippi State University.

2021 Co-Principal Investigator: "AI-Enabled Robotic Nursing Platform for Rural Settings," submitted to **Sony Research Award Program**, Principal Investigator – Kwanghee Won, Co-Principal Investigator – Doang Nguyen, Brandi Pravecek, Sep. 2021, Amount: $100,000.

Publications

Conference Papers

[C31]. *(CSCWD)*, Bingshu Shi, Meiling Liu, Jiyun Zhou, and **Fu, Kaiqun**. Sentiment summarization generation based on multi instance learning and graph convolution on social media. In *2024 27th International Conference on Computer Supported Cooperative Work in Design (CSCWD)*, pages 242–247. IEEE, 2024.

[C30]. *(IEEE BigData)*, Yangxiao Bai and **Kaiqun Fu**. A large language model-based fake news detection framework with rag fact-checking. In *2024 IEEE International Conference on Big Data (BigData)*. IEEE, 2024.

[C29]. *(ACM SIGAPP)*, Pooja Aslami, Tara Aryal, Astha Rai, Niranjan Bhujel, Hossein Moradi Rekabdarkolaee, **Kaiqun Fu**, Reinaldo Tonkoski, Zongjie Wang, and Timothy M Hansen. Power system frequency dynamics modeling, state estimation, and control using neural ordinary differential equations (nodes) and soft actor-critic (sac) machine learning approaches. *ACM SIGAPP Applied Computing Review*, volume 24, pages 24–39. ACM New York, NY, USA, 2024.

[C28]. *(NAPS)*, Pooja Aslami, Tara Aryal, Niranjan Bhujel, Hossein Moradi Rekabdarkolaee, Kaiqun Fu, Zongjie Wang, and Timothy M Hansen. A real-time digital simulator accelerated reinforcement learning training environment for power system frequency dynamics. In *2024 56th North American Power Symposium (NAPS)*, pages 1–6. IEEE, 2024.

[C27]. *(ASONAM)*, Shengkun Wang, YangXiao Bai, **Kaiqun Fu**, Linhan Wang, Chang-Tien Lu, and Taoran Ji. Alerta-net: A temporal distance-aware recurrent networks for stock movement and volatility prediction. In *Proceedings of the 2023 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*. IEEE, 2023.

[C26]. *(IEEE BigData)*, Shengkun Wang, YangXiao Bai, Taoran Ji, **Kaiqun Fu**, Linhan Wang, and Chang-Tien Lu. Stock movement and volatility prediction from tweets, macroeconomic factors and historical prices. In *2023 IEEE International Conference on Big Data (BigData)*, pages 1863–1872. IEEE, 2023.

[C25]. *(AAAI)*, Hoa Ta, Shi Wen Wong, Nathan McClanahan, Jung-Han Kimn, and **Kaiqun Fu**. Exploration on physics-informed neural networks on partial differential equations (student abstract). In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 37, pages 16344–16345, 2023.

[C24]. *(IEEE BigData)*, Yanshen Sun, **Kaiqun Fu**, and Chang-Tien Lu. Roadformer: Road-anchored adversarial dynamic graph transformer for unlimited-range traffic incident impact prediction. In *2023 IEEE International Conference on Big Data (BigData)*, pages 895–904. IEEE, 2023.

[C23]. *(AAAI)*, Yangxiao Bai and **Kaiqun Fu**. Pantop: Pandemic topic detection and monitoring system (student abstract). In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 37, pages 16158–16159, 2023.

[C22]. *(NAPS)*, Tara Aryal, Pooja Aslami, Niranjan Bhujel, Hossein Moradi Rekabdarkolaee, **Kaiqun Fu**, and Timothy M Hansen. Application of neural ordinary differential equations to power system frequency dynamics. In *2023 North American Power Symposium (NAPS)*, pages 1–6. IEEE, 2023.

[C21]. *(AAAI)*, Zonghan Zhang, Subhodip Biswas, Fanglan Chen, **Kaiqun Fu**, Taoran Ji, Chang-Tien Lu, Naren Ramakrishnan, and Zhiqian Chen. Blocking influence at collective level with hard constraints (student abstract). In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 36, pages 13115–13116, 2022.

[C20]. *(ITSC)*, Lei Zhang, **Kaiqun Fu**, Taoran Ji, and Chang-Tien Lu. Granger causal inference for interpretable traffic prediction. In *2022 IEEE 25th International Conference on Intelligent Transportation Systems (ITSC)*, pages 1645–1651. IEEE, 2022.

[C19]. *(AAAI)*, Jason Wang, **Kaiqun Fu**, Zhiqian Chen, and Chang-Tien Lu. Augmentation of chinese character representations with compositional graph learning (student abstract). In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 36, pages 13075–13076, 2022.

[C18]. *(AAAI)*, Guangyu Meng, Qisheng Jiang, **Kaiqun Fu**, Beiyu Lin, Chang-Tien Lu, and Zhiqian Chen. Early forecast of traffic accident impact based on a single-snapshot observation (student abstract). In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 36, pages 13015–13016, 2022.

[C17]. *(ICANN)*, Zibo Liu, **Kaiqun Fu**, and Xiaotong Liu. Multi-view cascading spatial-temporal graph neural network for traffic flow forecasting. In *International Conference on Artificial Neural Networks*, pages 605–616. Springer Nature Switzerland Cham, 2022.

[C16]. *(IEEE BigData)*, **Kaiqun Fu**, Taoran Ji, Nathan Self, Zhiqian Chen, and Chang-Tien Lu. A hierarchical attention graph convolutional network for traffic incident impact forecasting. In *2021 IEEE International Conference on Big Data (Big Data)*, pages 1619–1624. IEEE, 2021.

[C15]. *(AAAI)*, Taoran Ji, Nathan Self, **Kaiqun Fu**, Zhiqian Chen, Naren Ramakrishnan, and Chang-Tien Lu. Dynamic multi-context attention networks for citation forecasting of scientific publications. In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 35, pages 7953–7960, 2021.

[C14]. *(ASONAM)*, Omer Zulfiqar, Yi-Chun Chang, Po-Han Chen, **Kaiqun Fu**, Chang-Tien Lu, David Solnick, and Yanlin Li. Risecure: Metro incidents and threat detection using social media. In *2020 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, pages 531–535. IEEE, 2020.

[C13]. *(IEEE BigData)*, Jason Wang, **Kaiqun Fu**, and Chang-Tien Lu. Sosnet: A graph convolutional network approach to fine-grained cyberbullying detection. In *2020 IEEE International Conference on Big Data (Big Data)*, pages 1699–1708. IEEE, 2020.

[C12]. *(ACM SIGSPATIAL)*, **Kaiqun Fu**, Taoran Ji, Liang Zhao, and Chang-Tien Lu. Titan: A spatiotemporal feature learning framework for traffic incident duration prediction. In *Proceedings of the 27th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pages 329–338, 2019.

[C11]. *(ASONAM)*, Taoran Ji, Xuchao Zhang, Nathan Self, **Kaiqun Fu**, Chang-Tien Lu, and Naren Ramakrishnan. Feature driven learning framework for cybersecurity event detection. In *Proceedings of the 2019 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining*, pages 196–203, 2019.

[C10]. *(IJCAI)*, Taoran Ji, Zhiqian Chen, Nathan Self, **Kaiqun Fu**, Chang-Tien Lu, and Naren Ramakrishnan. Patent citation dynamics modeling via multi-attention recurrent networks. In *Proceedings of the Twenty-Eighth International Joint Conference on Artificial Intelligence (IJCAI-19)*, pages 2621–2627, 2019.

[C9]. *(ACM SIGSPATIAL)*, **Kaiqun Fu**, Zhiqian Chen, and Chang-Tien Lu. Streetnet: preference learning with convolutional neural network on urban crime perception. In *Proceedings of the 26th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pages 269–278, 2018.

[C8]. *(ASONAM)*, Taoran Ji, **Kaiqun Fu**, Nathan Self, Chang-Tien Lu, and Naren Ramakrishnan. Multi-task learning for transit service disruption detection. In *2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, pages 634–641. IEEE, 2018.

[C7]. *(TRB)*, Rakesh Nune, Weisheng Zhong, **Kaiqun Fu**, and Jason X Tao. Exploring social traffic data for evaluating urban arterial congestion. In *Transportation Research Board 96th Annual Meeting*, number 17-05031. TRB, 2017.

[C6]. *(TRB)*, Rakesh Nune, **Kaiqun Fu**, and Jason X Tao. Extracting urban street features using street level lidar data for connected vehicle applications. In *Transportation Research Board 96th Annual Meeting*, number 17-03295. TRB, 2017.

[C5]. *(ACM SIGSPATIAL)*, **Kaiqun Fu**, Weisheng Zhong, Chang-Tien Lu, and Arnold P Boedihardjo. Find the butterfly: a social media based arterial incidents detection and causality analysis system. In *Proceedings of the 23rd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pages 1–4, 2015.

[C4]. *(TRB)*, **Kaiqun Fu**, R Nune, and JX Tao. Social media data analysis for traffic incident detection and management. In *Transportation Research Board 94th Annual Meeting*, number 15-4022. TRB, 2015.

[C3]. *(ITSC)*, **Kaiqun Fu**, Chang-Tien Lu, Rakesh Nune, and Jason Xianding Tao. Steds: Social media based transportation event detection with text summarization. In *2015 IEEE 18th International Conference on Intelligent Transportation Systems*, pages 1952–1957. IEEE, 2015.

[C2]. *(ACM SIGSPATIAL)*, **Kaiqun Fu**, Yen-Cheng Lu, and Chang-Tien Lu. Treads: A safe route recommender using social media mining and text summarization. In *Proceedings of the 22nd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pages 557–560, 2014.

[C1]. *(ACM SIGSPATIAL)*, Meiling Liu, **Kaiqun Fu**, Chang-Tien Lu, Guangsheng Chen, and Huiqiang Wang. A search and summary application for traffic events detection based on twitter data. In *Proceedings of the 22nd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pages 549–552, 2014.

Journal Articles

[J4]. *(ACM TKDD)*, Taoran Ji, Nathan Self, **Kaiqun Fu**, Zhiqian Chen, Naren Ramakrishnan, and Chang-Tien Lu. Citation forecasting with multi-context attention-aided dependency modeling. *ACM Transactions on Knowledge Discovery from Data*. ACM New York, NY, 2024.

[J3]. *(JKSU)*, Yanshen Sun, Yen-Cheng Lu, **Kaiqun Fu**, Fanglan Chen, and Chang-Tien Lu. Detecting anomalous traffic behaviors with seasonal deep kalman filter graph convolutional neural networks. *Journal of King Saud University-Computer and Information Sciences*, volume 34, pages 4729–4742. Elsevier, 2022.

[J2]. *(ACM Computing Surveys)*, Zhiqian Chen, Fanglan Chen, Lei Zhang, Taoran Ji, **Kaiqun Fu**, Liang Zhao, Feng Chen, Lingfei Wu, Charu Aggarwal, and Chang-Tien Lu. Bridging the gap between spatial and spectral domains: A unified framework for graph neural networks. *ACM Computing Surveys*. ACM New York, NY, 2021.

[J1]. *(ACM SIGSPATIAL Newsletter)*, **Kaiqun Fu**, Abdulaziz Alhamadani, Taoran Ji, and Chang-Tien Lu. Batman or the joker? the powerful urban computing and its ethics issues. *SIGSPATIAL Special*, volume 11, pages 16–25. ACM New York, NY, USA, 2019.

Book Chapters

[B1]. Omer Zulfiqar, Yi-Chun Chang, Po-Han Chen, **Kaiqun Fu**, Chang-Tien Lu, David Solnick, and Yanlin Li. Risecure: Metro transit disruptions detection using social media mining and graph convolution. In *Social Media Analysis for Event Detection*, pages 111–131. Springer International Publishing Cham, 2022.

Pre-print

[P2]. *(pre-print)*, **Kaiqun Fu**, Yangxiao Bai, Weiwei Zhang, and Deepthi Kolady. Latex: Language pattern-aware triggering event detection for adverse experience during pandemics. *arXiv preprint arXiv:2310.03941*, 2023.

[P1]. *(pre-print)*, Deepthi Kolady, Amrit Dumre, Weiwei Zhang, **Kaiqun Fu**, Marcia O'Leary, and Laura Rose. Social media use among american indians in south dakota: Preferences and perceptions. *arXiv preprint arXiv:2307.01404*, 2023.

Teaching Experience

Spring, 2024 **CSC705: Design and Analysis of Computer Algorithms**, *Instructor*, (17 graduates), South Dakota State University.

Spring, 2024 **CSC792: Spatial Data Mining**, *Instructor*, (9 graduates), South Dakota State University.

Fall, 2023 **CSC492/592: Introduction to Machine Learning**, *Instructor*, (22 undergraduates and graduates), South Dakota State University (eval: 4.2/5.0).

Spring, 2023 **CSC705: Design and Analysis of Computer Algorithms**, *Instructor*, (22 graduates), South Dakota State University (eval: 4.0/5.0).

Spring, 2023 **CSC792: Spatial Data Mining**, *Instructor*, (17 graduates), South Dakota State University (eval: 4.3/5.0).

Fall, 2022 **CSC492/592: Introduction to Machine Learning**, *Instructor*, (26 undergraduates and graduates), South Dakota State University (eval: 4.4/5.0).

Spring, 2022 **CSC792: Spatial Data Mining**, *Instructor*, (12 graduates), South Dakota State University (eval: 4.1/5.0).

Fall, 2021 **SE305: Foundations of Software Engineering**, *Instructor*, (28 undergraduates), South Dakota State University.

Spring, 2019 **CS5614: Database Management Systems**, *Teaching Assistant*, (14 graduates), Virginia Tech.

Fall, 2018 **CS6604: Spatial Data Management**, *Teaching Assistant*, (10 graduates), Virginia Tech.

Fall, 2017 **CS6604: Spatial Data Management**, *Teaching Assistant*, (15 graduates), Virginia Tech.

Spring, 2017 **CS5614: Database Management Systems**, *Teaching Assistant*, (12 graduates), Virginia Tech.

Students and Advising

Ph.D. Students

1/2022-present **Yangxiao Bai**, *Department of EECS, SDSU*, Dissertation Topic: Social and News Media Mining with Graph Neural Networks, (Role: Sole Advisor).

8/2023-present **Xiaozhu Jin**, *Department of EECS, SDSU*, Dissertation Topic: Environment Perception Learning from Multimodal Geographical Data, (Role: Sole Advisor).

Starting 8/2024 **Prakriti Baral**, *Department of EECS, SDSU*, Dissertation Topic: Spatiotemporal Graph Neural Networks for Natural Disaster Forecasting, (Role: Co-Advisor).

M.S. Students

1/2022-12/2022 **Anqi Zhang**, *Department of EECS, SDSU*, Thesis Topic: Sentiment Without Sentiment Analysis: Using The Recommendation Outcome Of Steam Game Reviews As Sentiment Predictor, (Role: Sole Advisor).
Current position: Ecdysis Foundation

5/2022-4/2023 **ShiWen Wong**, *Department of Math&Stat, SDSU*, Thesis Topic: Solving a Higher Order Differential Equation Using Neural Network, (Role: Co-Advisor).
Current position: Channel Partners, LLC

8/2023-present **Fatoumata Ceesay**, *Department of EECS, SDSU*, Thesis Topic: Location Encoding with Street View Imagery, (Role: Sole Advisor).

8/2023-present **Shixian Jing**, *Department of EECS, SDSU*, Thesis Topic: Graph Neural Networkbased Human Activity Classification with Skeleton Extraction and Computer Vision, (Role: Sole Advisor).

8/2020-5/2021 **Omer Zulfiqar**, *Department of CS, Virginia Tech*, Thesis Topic: Detecting Public Transit Service Disruptions Using Social Media Mining and Graph Convolution, (Role: Mentor).
Current position: Co-Founder of Pam

8/2020-5/2021 **Yi-Chun Chang**, *Department of CS, Virginia Tech*, Thesis Topic: Metro Security Incidents And Threat Detection Using Social Media, (Role: Mentor).
Current position: Software Engineer at Google

8/2020-5/2021 **Po-Han Chen**, *Department of CS, Virginia Tech*, Thesis Topic: Metro Security Incidents And Threat Detection Using Social Media, (Role: Mentor).
Current position: Software Engineer at DoorDash

Undergraduate Students

6/2023-present **Caden Fischer**, *Department of EECS, SDSU*, Research Topic: A Study on the Local Deep Galerkin Method (LDGM) applied to 2D - Cahn-Hilliard Equation (2D-CH), (Role: Co-Advisor).

6/2023-8/2023 **Samantha Schiefen**, *Morningside University*, Research Topic: Aerial Fire Detection with Semantic Segmentation, (Role: Co-Advisor).

6/2022-8/2022 **Hoa Ta**, *UC Irvine*, Research Topic: Exploration on physics-informed neural networks on partial differential equations, (Role: Co-Advisor).

Highschool Students

5/2020-4/2021 **Jason Wang**, *Thomas Jefferson High School for Science and Technology*, Research Topic: A graph convolutional network approach to fine-grained cyberbullying detection, (Role: Mentor).
Current: Undergraduate at Harvard University

5/2019-8/2019 **Colin Berry**, *Yorktown High School*, Research Topic: The Diffusion of Information: The Impact of Tweet Sentiment and Topic on Retweets, (Role: Mentor).
Current: Undergraduate at University of Virginia

Invited Talks

10/2024 *University of North Dakota*, School of Electrical Engineering and Computer Science, *Center for Cyber Security/AI Research*; Distinguished Guest Speaker.

4/2024 *SUNY Albany*, College of Emergency Preparedness, Homeland Security, and Cybersecurity, *New Trends in Informatics Research Conference*; Keynote Speaker.

5/2023 *South Dakota State University*, Department of Geography and Geospatial Sciences

5/2023 *South Dakota State University*, Department of Mathematics & Statistics

12/2022 *21th IEEE BigData Conference*, Workshop on Multimodal Big Data; Keynote Speaker.

2/2022 *George Mason University*, Department of Information Sciences and Technology

10/2021 *South Dakota State University*, Jerome J. Lohr College of Engineering

Professional Services

Panel / Grant Proposal Reviewer

National Science Foundation, CISE

Organizer

ACM SIGSPATIAL, 2021, 2022

Editor

Frontiers in Big Data

Conference / Workshop Co-Chairs

ACM SIGSPATIAL, 2021, 2022, 2023 - Competition Chair
IEEE BigData, 2024 - Organizing Committee / Poster Chair
International Workshop on AI Music Generation - IEEE BigData, 2023
International Workshop on Multimodal AI - IEEE BigData, 2022, 2023
International Workshop on Multimodal Big Data - IEEE BigData, 2022

Session Chair

SIAM Data Mining, 2022

Program Committee

IEEE BigData, 2021, 2022, 2023
IJCAI, 2021, 2022, 2023
ACM SIGSPATIAL, 2021, 2022, 2023
SIAM Data Mining, 2022

Reviewer

Association for the Advancement of Artificial Intelligence (AAAI)
International Joint Conference on Artificial Intelligence (IJCAI)
ACM SIGSPATIAL

IEEE International Conference on Big Data
IEEE International Conference on Intelligent Transportation Systems (ITSC)
ACM Transactions on Knowledge Discovery from Data (TKDD)
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
IEEE Transactions on Artificial Intelligence (TAI)
ACM Transactions on Intelligent Systems and Technology (TIST)
IEEE Transactions on Big Data (T-BD)
IEEE Transactions on Intelligent Transportation Systems (T-ITS)
ACM Transactions on Spatial Algorithms and Systems (TSAS)
IEEE Transactions on Computational Social Systems
IEEE Transactions on Emerging Topics in Computational Intelligence
IEEE Internet of Things Journal
Journal of Transportation Engineering, Part A
IEEE Transactions on Emerging Topics in Computing
IEEE Transactions on Vehicular Technology
Connection Science
IEEE Transactions on Information Forensics & Security
GeoInformatica
IEEE Intelligent Transportation Systems Magazine
PLOS ONE
IEEE Transactions on Affective Computing
Data & Knowledge Engineering
Transportation Research Board

Service at SDSU

Graduate Coordinator, 2024, 2025
Undergraduate Curriculum Committee, 2023, 2024
Graduate Curriculum Committee, 2022, 2023, 2024
Search Committee for new faculty search, 2022, 2023, 2024

References

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