

Bijaya Adhikari
Assistant Professor of Computer Science
University of Iowa

Email: [firstname]-[lastname]@uiowa.edu
Web: <https://homepage.cs.uiowa.edu/~badhikari/>
Mailing Address: 14 McLean Hall
Iowa City, IA 52242

**RESEARCH
INTEREST**

My primary research interest is in data mining and machine learning on graphs, with a focus on health applications. I derive tractable computational formulations for clinical and epidemiological problems, often in collaboration with domain experts, and design approximate algorithms, machine learning methods, or hybrid approaches that combine both. My recent work includes designing approximate algorithms for detecting asymptomatic infections, developing spectral methods to mitigate infection transmission in healthcare settings, modeling and generating synthetic healthcare operations data, and developing graph neural network-based models for personalized prediction of patient adverse risk.

**WORK
EXPERIENCE**

Assistant Professor 2020 - Present
Department of Computer Science
The University of Iowa, Iowa City, IA

Applied Scientist Intern Aug 2019 - Dec 2019
Amazon, Palo Alto, CA

Data Science Intern Jun 2017 - Aug 2017
WalmartLabs, Sunnyvale, CA

EDUCATION

Ph.D., Computer Engineering 2015 - 2020
Virginia Tech, Blacksburg, VA
Advisor: Prof. B. Aditya Prakash

M.S., Computer Science (Along the way) 2015 - 2019
Virginia Tech, Blacksburg, VA

B. Eng., Computer Engineering 2011 - 2015
Vistula University, Warsaw, Poland

**HONORS AND
FELLOWSHIPs**

- NSF CAREER award, 2025
- SIGKDD Outstanding (top 10%) reviewer, 2025
- Best student paper award runner-up, ASONAM 2022
- 8th Heidelberg Laureate Forum Young Researcher Attendee, 2021
- Second place in the C3.ai COVID-19 Grand Challenge, 2020
- First place in the COVID-19 Symptom Data Challenge, 2020
- Pratt Fellowship, Virginia Tech 2017, 2019
- KDD, SDM, ICDM, WWW Travel Awards, 2017-2019

PUBLICATIONS Refereed Journals and Conferences [My students in underline]

1. Jeffrey Keithley, Akash Choudhuri, **Bijaya Adhikari**, and Sriram Pemmaraju. “Analyzing Greedy Vaccine Allocation Algorithms for Metapopulation Disease Models”. *PLoS Computational Biology* 2025
2. Hieu Vu, Alberto M. Segre, and **Bijaya Adhikari**. “TempoBiGen: A Curated Generative Model for Healthcare Mobility Logs with Visit Duration”. *ECMLPKDD 2025*
3. Hieu Vu, Roger Struble, Philip M. Polgreen, **Bijaya Adhikari**, and Ted Herman. “Contact Observations from an Intensive Care Unit”. *Nature Scientific Data* 2025
4. Yongjian Zhong, Liao Zhu, Hieu Vu, and **Bijaya Adhikari**. “Implicit Subgraph Neural Network”. *ICML 2025*
5. Akash Choudhuri, Hieu Vu, Kishlay Jha and **Bijaya Adhikari**. “Domain Knowledge Augmented Contrastive Learning on Dynamic Hypergraphs for Improved Health Risk Prediction”. *SDM 2025*
6. Akash Choudhuri, Yongjian Zhong, Mehrdad Moharrami, Christine Klymko, Mark Heimann, Jayaraman Thiagarajan and **Bijaya Adhikari**. “Conformal Edge-Weight Prediction in Latent Space”. *SDM 2025*
7. Jiaming Cui, **Bijaya Adhikari**, Arash Haddadan, A S M Ahsan-Ul Haque, Jilles Vreeken, Anil Vullikanti and B. Aditya Prakash. “Accurately Estimating Unreported Infections using Information Theory”. *SDM 2025*
8. Yongjian Zhong, Hieu Vu, Tianbao Yang, and **Bijaya Adhikari**. “Efficient and Effective Implicit Dynamic Graph Neural Network”. *SIGKDD 2024*
9. Aaron Miller, Alan Arakkal, Daniel Sewell, Alberto M. Segre, **Bijaya Adhikari**, and Philip M. Polgreen. “Hospitalizations Among Family Members Increase the Risk of MRSA Infection in a Household”. *Infection Control and Epidemiology* 2024
10. Yongjian Zhong, Weiyu Huang and **Bijaya Adhikari**. “End-to-End Risk-aware Reinforcement Learning to Detect Asymptomatic Cases in Healthcare Facilities”. *ICHI 2024*
11. Juncheng Ding, Shailesh Dahal, **Bijaya Adhikari** and Kishlay Jha. “Learning to Rank Complex Biomedical Hypotheses for Accelerating Scientific Discovery”. *ICHI 2024*
12. Akash Choudhuri, Hankyu Jang, Alberto M. Segre, Philip M. Polgreen, Kishlay Jha and **Bijaya Adhikari**. “Continually-Adaptive Representation Learning Framework for Time-Sensitive Healthcare Applications”. *CIKM 2023*
13. Pratik Maitra, Masahiro Kiji, Talal Riaz, Philip M. Polgreen, Alberto M. Segre, Sriram Pemmaraju and **Bijaya Adhikari**. “CAD2GRAPH: Automated Extraction of Spatial Graphs from Architectural Drawings”. *ECML/PKDD 2023*
14. Sen Pei, Seth Blumberg, Jaime Cascante Vega, Tal Robin, Yue Zhang, Richard J. Medford, **Bijaya Adhikari**, and Jeffrey Shaman. “Challenges in Forecasting Antimicrobial Resistance”. *Emerging Infectious Diseases*, 2023
15. Hangkyu Jang, Andrew Fu, Jiaming Cui, Methun Kamruzzaman, B. Aditya Prakash, Anil Vullikanti, **Bijaya Adhikari** and Sriram Pemmaraju. “Detecting Sources of Healthcare Associated Infections”. *AAAI 2023*
16. Alexander Rodriguez, Jiaming Cui, Naren Ramakrishnan, **Bijaya Adhikari** and B. Aditya Prakash. “EINNs: Epidemiologically-Informed Neural Networks”. *AAAI 2023*

17. Masahiro Kiji, D.M. Hasibul Hasan, Alberto M. Segre, Sriram Pemmaraju, and **Bijaya Adhikari**. “Near-Optimal Spectral Disease Mitigation in Healthcare Facilities”. *ICDM 2022*
18. **Best Student Paper Runner-up**. Hankyu Jang, Sulyun Lee, D. M. Hasibul Hasan, Philip M. Polgreen, Sriram V. Pemmaraju and **Bijaya Adhikari**. “Dynamic Healthcare Embeddings for Improving Patient Care”. *ASONAM 2022*
19. Hankyu Jang, Shreyas Pai, **Bijaya Adhikari**, and Sriram V. Pemmaraju. “Risk-aware Temporal Cascade Reconstruction to Detect Asymptomatic Cases”. *KAIS 2022*
20. Estee Y Cramer, Evan L Ray et. al. “Evaluation of Individual and Ensemble Probabilistic Forecasts of COVID-19 Mortality in the United States”. *PNAS 2022*
21. **Selected among ICDM best papers**. Hankyu Jang, Shreyas Pai, **Bijaya Adhikari**, and Sriram Pemmaraju. “Risk-aware Temporal Cascade Reconstruction to Detect Asymptomatic Cases”. *ICDM 2021*
22. D.M. Hasibul Hasan, Alex Rohwer, Hankyu Jang, Ted Herman, Philip M. Polgreen, Daniel K. Sewell, **Bijaya Adhikari**, and Sriram Pemmaraju. “Modeling and Evaluation of Clustering Patient Care into Bubbles”. *ICHI 2021*
23. Alexander Rodriguez, Nikhil Muralidhar, **Bijaya Adhikari**, Naren Ramakrishnan, and B. Aditya Prakash. “Steering a Historical Disease Forecasting Model Under a Pandemic: Case of Flu and COVID-19”. *AAAI 2021*
24. Alexander Rodriguez, Anika Tabassum, Jiaming Cui, Jajia Xie, Javen Ho, Pulak Agarwal, **Bijaya Adhikari** and B. Aditya Prakash. “DeepCOVID: An Operational DL-driven Framework for Explainable Real-time COVID-19 Forecasting”. *AAAI 2021*
25. **Bijaya Adhikari**, Liangyue Li, Nikhil Rao and Karthik Subbian. “Finding Needles in Heterogeneous Haystacks”. *AAAI 2021*
26. Alexander Rodriguez, **Bijaya Adhikari**, Andres D. Gonzalez, Charles Nicholson, Anil Vullikanti, and B. Aditya Prakash. “Mapping Network States using Connectivity Queries”. *BIGDATA 2020*
27. **Selected among AAMAS best papers**. Prathyush Sambaturu, **Bijaya Adhikari**, Bryan Lewis, B. Aditya Prakash, Srinivasan Venkatramanan, and Anil Vullikanti. “Designing Near-Optimal Temporal Interventions to Contain Epidemics”. *AAMAS 2020*
28. **Featured in the PLoS Complexity Channel**. **Bijaya Adhikari**, Bryan Lewis, Anil Vullikanti, Jose Mauricio Jimenez and B. Aditya Prakash. “Fast and Near-Optimal Monitoring for Healthcare Acquired Infection Outbreaks”. *PLoS Computational Biology 2019*
29. **Bijaya Adhikari**, Xinfeng Xu, Naren Ramakrishnan and B. Aditya Prakash. “EpiDeep: Exploiting Embeddings for Epidemic Forecasting”. *KDD 2019*
30. Sorour E. Amiri, **Bijaya Adhikari**, Aditya Bharadwaj, and B. Aditya Prakash. “NetGist: Learning to generate task-based network summaries”. *ICDM 2018*
31. Mohammad R Islam, Sathappan Muthiah, **Bijaya Adhikari**, B. Aditya Prakash, and Naren Ramakrishnan. “DeepDiffuse: Predicting the ‘Who’ and ‘When’ in Cascades”. *ICDM 2018*
32. **Bijaya Adhikari**, Yao Zhang, Naren Ramakrishnan, and B. Aditya Prakash. “Sub2Vec: Feature Learning for Subgraphs”. *PAKDD 2018*

33. **Bijaya Adhikari**, Parikshit Sondhi, Wenke Zhang, Mohit Sharma, and B. Aditya Prakash. “Mining E-Commerce Query Relations using Customer Interaction Networks”. *WWW 2018*
34. **Bijaya Adhikari**, Pavan Rangudu, B. Aditya Prakash, and Anil Vullikanti. “Near-Optimal Mapping of Network States using Probes”. *SDM 2018*
35. **Bijaya Adhikari**, Yao Zhang, Sorour E. Amiri, Aditya Bharadwaj, and B. Aditya Prakash. “Propagation based Temporal Network Summarization”. *TKDE 2018*
36. Yao Zhang, **Bijaya Adhikari**, Steve Jan, and B. Aditya Prakash. “MeiKe: Influence-based Communities in Networks”. *SDM 2017*
37. **Bijaya Adhikari**, Yao Zhang, Aditya Bharadwaj, and B. Aditya Prakash. “Condensing Temporal Networks using Propagation”. *SDM 2017*
38. Stanislaw Placzek and **Bijaya Adhikari**. “Analysis of MultiLayer Neural Networks with Direct and Cross Forward Connection”. *Fundamenta Informaticae 2014*
39. Stanislaw Placzek and **Bijaya Adhikari**. “Coordination Algorithm in Hierarchical Structure of the Learning Process of Artificial Neural Network”. *CS&P 2014*

Refereed Workshops

1. Akash Choudhuri, Philip M. Polgreen, Alberto M. Segre and **Bijaya Adhikari**. “Summarizing Clinical Notes using LLMs for ICU Bounceback and Length-of-Stay Prediction”. *ICDM 2024 Workshop DMBIH*
2. Alexander Rodriguez, Nikhil Muralidhar, **Bijaya Adhikari**, Naren Ramakrishnan, and B. Aditya Prakash. “Steering a Historical Disease Forecasting Model Under a Pandemic: Case of Flu and COVID-19”. *NeurIPS 2020 Workshop MLPH*
3. Alexander Rodriguez, **Bijaya Adhikari**, Andres D. Gonzalez, Charles Nicholson, Anil Vullikanti, and B. Aditya Prakash. “Mapping Network States using Connectivity Queries”. *NeurIPS 2020 Workshop AI+ HADR*
4. Alexander Rodriguez, **Bijaya Adhikari**, Andres D. Gonzalez, Charles Nicholson, Anil Vullikanti, and B. Aditya Prakash. “Mapping Network States using Connectivity Queries”. *NeurIPS 2020 Workshop AI+ HADR*
5. Sorour E. Amiri, **Bijaya Adhikari**, John Wenskovitch, Michelle Dowling, Chris North, and B. Aditya Prakash. “NetReAct: Learning Network Visualizations for Text Analytics using Interactions”. *NeurIPS 2020 Workshop HAMLETS*
6. Alexander Rodriguez, **Bijaya Adhikari**, Naren Ramakrishnan, and B. Aditya Prakash. “Incorporating Expert’s Guidance in Epidemic Forecasting”. *SIGKDD Workshop EpiDAMIK 2020*
7. **Bijaya Adhikari**, Yao Zhang, Naren Ramakrishnan, and B. Aditya Prakash. “Distributed Representations of Subgraphs”. *ICDM Workshop DAMNET 2017*
8. Pavan Rangudu, **Bijaya Adhikari**, B. Aditya Prakash, and Anil Vullikanti. “Using Partial Probes to Infer Network States”. *SIGKDD Workshop MLG 2017*

Grants and Contracts

NSF CAREER 2025 - 2030
CAREER: Online Algorithms for Real-time Interventions against Healthcare Associated Infections
Role: Sole PI, Award amount: 600K.

NSF SmartHealth 2023 - 2027
SCH: Shallow and Deep Personalization for Hearing Aids
Role: Co-PI, Award amount: 1.2M.

NSF CyberTraining 2023 - 2026
Collaborative Research: CyberTraining: Implementation: Small: Inclusive Cyberinfrastructure and Machine Learning Training to Advance Water Science Research
Role: Site-PI, Award amount: 500K.

P3/Jumpstarting Tomorrow 2022 - 2023
Ensuring Equity in Spatio-Temporal Disease Surveillance
Role: PI, Award amount: 25K.

UIowa OVPR Interdisciplinary Scholars Grant 2022 - 2023
Understanding the Potential Adverse Health Effects Attributable to the CF Carrier State
Role: Co-I, Award amount: 220K.

CDC Modeling Infectious Disease Network. 2020 - 2022
Covid-19 Supplemental Funding
Role: Co-I, Award amount: 1.2M.

TALKS

A Curated Generative Model for Healthcare Mobility Logs with visit duration

CDC April 2025

Data Mining EHRs to Combat HAIs

Keynote, DS2MH workshop March 2025

Efficient and Effective Implicit Dynamic Graph Neural Network

SIGKDD August 2024

Domain Knowledge Augmented Contrastive Learning on Dynamic Hypergraphs for Improved Health Risk Prediction

CDC June 2024

Leveraging Clinical Notes to Enhance CDI predictions

CDC MInD / HIRe In-person Meeting June 2024

Exploiting and optimizing mobility to reduce Hospital acquired infection

Invited Lecture, Grinnell College September 2023

Near-Optimal Spectral Disease Mitigation in Healthcare Facilities

ICDM November 2022

Spectral Optimization on Dynamic Networks for Diffusion Analysis

Keynote, 8th Iowa CS Graduate Research Symposium November 2022

Mining and Optimizing Mobility to Control Infection Spread

Department of BioStatistics, UIowa October 2021

Dynamic Healthcare Embeddings for Improved Patient-Care

CDC June 2021

EpiDeep: Exploiting Embeddings for Epidemic Forecasting

KDD August 2019

Learning to Generate Network Summaries

ICDM	November 2018
Leveraging Graph Mining for E-Commerce	
WalmartLabs	July 2018
Sub2Vec: Feature Learning for Subgraphs	
PAKDD	June 2018
Near-optimal Mapping of Network States using Probes	
SDM	May 2018
Mining E-Commerce Query Relations using CINs	
WWW	April 2018
Inference of Missing Infections, Virginia Tech	
March 2018	
Distributed Representations of Subgraphs	
ICDMW	November 2017
Mining Customer Interaction Networks	
WalmartLabs	July 2017
Condensing Temporal Networks using Propagation	
SDM	April 2017
Non-overlapping Community Detection	
Virginia Tech	October 2015

**STUDENT
MENTORING**

PHD Advisees

- Jeffery Kiethley, (co-advising with Sriram Pemmaraju), Expected Graduation: 2026
- Akash Choudhuri, Expected Graduation: 2026
- Yongjian Zhong, Expected Graduation: 2026
- Hieu Vu, Expected Graduation: 2027
- Mihail Neagu, Expected Graduation: 2030
- Suleman Baloch, Expected Graduation: 2030

MCS Advisees

- Pratik Maitra, Graduation year: 2023
- Lucas Zach Ryan, Graduation year: 2023
- Weiyu Zhang, Graduation year: 2023
- D. M. Hasibul Hasan, Graduation year: 2022
- Masahiro Kiji, Graduation year: 2022

Undergraduate Research Advisees

- Liao Zhu, Graduation year: 2025
- Tinh Tran, Graduation year: 2024

Summer Research Advisees

- Jonathan Wang, Grinnell College, 2025, REU
- Adam Sayyed, University of Maryland Baltimore County, 2024, UIOWA SROP
- Mulan Liu, University of Wisconsin-Madison, 2023, REU
- Vivian Nguyen, University of Nebraska-Lincoln, 2022, REU
- Brodie McCuen, Cornell College, 2021, REU
- McKenna Huse, Coe College, 2021, REU

TEACHING	CS 3330 Algorithms	Fall 2025
	CS 3330 Algorithms	Fall 2024
	CS 3330 Algorithms	Spring 2024
	CS 4420 Artificial Intelligence	Fall 2023
	CS 4980 Computational Epidemiology	Spring 2022
	CS 4420 Artificial Intelligence	Fall 2022
	CS 4420 Artificial Intelligence	Spring 2022
	CS 3330 Algorithms	Spring 2021
	CS 4980 Mining and Learning on large Networks	Fall 2020

At Virginia Tech

Instructor for Data Analytics (CS 5525) Spring 2020

Instructor of record for CS 5525. It is a graduate course with 20 students currently enrolled. Roles included giving 2 hours 30 minutes lectures each week, guiding GTAs with grading, project design, and so on.

SERVICES

Organizing Committee

IEEE BIGDATA Vice Co-Chair of Big Data Search and Mining 2024
 epiDAMIK workshop 2018-2024

SPC Member

AAAI 2023-2026

PC Member

DeMal 2021
 SDM 2019- 2021
 BigData 2020, 2021
 AAAI 2021, 2022
 IJCAI 2021-2025
 WSDM 2021-2023
 ECML/PKDD 2023-2025
 CIKM 2023-2024
 PAKDD 2024-2026
 KDD 2024-2025

Journal Reviewing (Multiple Times): TKDE, PLoS ONE, PLoS Computational Biology, TKDD, NeuroComputing

Grant Reviewing: NSF, NIH, DOE, Deutsche Forschungsgemeinschaft

Member: SIAM, IEEE, ACM