# Sirisha Rambhatla


**Contact Information**

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Waterloo, ON, Canada

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**Research Focus**

Statistical Machine Learning, Spatiotemporal Data Analysis, Representation Learning, Interpretability and Blackbox Explainability, with applications to AI for Healthcare, Intelligent Automation, & Computer Vision

**Experience**

**Tenure-Track Assistant Professor** — July. 2021 – Present
University of Waterloo — Waterloo, ON, Canada

Management Science Engineering Department, Faculty of Engineering (*Primary*)
David R. Cheriton School of Computer Science, Faculty of Mathematics (*Cross-appointment*)
Systems Design Engineering Department, Faculty of Engineering (*Cross-appointment*)

Director, Critical Machine Learning Lab

*Affiliations:* Waterloo Artificial Intelligence (AI) Institute, Waterloo Institute for Sustainable Aeronautics (WISA), Computational Mathematics Program, and Cybersecurity and Privacy Institute (CPI)

**Postdoctoral Scholar – Research Associate** — Oct. 2019 – July, 2021
Computer Science Department (Mentor: Prof. Yan Liu ) — Los Angeles, CA, USA
University of Southern California

**Graduate Research Assistant** — 2011 – 12 & 2014 – 19
Department of Electrical and Computer Engineering — Minneapolis, MN, USA
University of Minnesota – Twin Cities

**Science Advisor** — Mar. 2013 – Jun. 2014
Intellectual Property (IP) and Technology Litigation — Minneapolis, MN, USA
Robins Kaplan LLP

**Engineering Intern (R&D)** — Jun.– Aug. 2011 & Jun.– Oct. 2012
Technology and Engineering Division — St. Paul, MN, USA
Ativa Medical Inc.

**Undergraduate Research Intern** — May 2009 – Jul. 2009
Networked Control Systems Lab — Kanpur, India
Indian Institute of Technology Kanpur (IIT-K)

**Education**

**Doctor of Philosophy (Ph.D.)** in Electrical Engineering — Sep. 2014 - Sep. 2019
University of Minnesota – Twin Cities — Minneapolis, MN
Thesis: *Provably Learning from Data: New Algorithms for Matrix/Tensor Decompositions & Factorizations*
Advisor: Prof. Jarvis Haupt

**Master of Science (M.S.)** in Electrical Engineering — Aug. 2010 - Dec. 2012
University of Minnesota – Twin Cities — Minneapolis, MN
Thesis: *Semi-Blind Source Separation via Sparse Approximation & Online Dictionary Learning*
Advisor: Prof. Jarvis Haupt

**Bachelor of Technology (B.Tech) Honors** in Electronics & Telecom. Eng. — Aug. 2006 - May 2010
College of Engineering Roorkee (COER) — Roorkee, India
University Bronze Medalist

## Awards and Honors

Highlighted Reviewer ( 8% of reviewers), *International Conference on Learning Representations (ICLR)* 2022
Outstanding Paper Presentation Award, *Plastic Surgery: the Meeting* 2021
Merit Award for Excellence in Postdoctoral Research, *WiSE, University of Southern California* 2020 – 21
ICLR Travel Award, *International Conference on Learning Representations (ICLR)* 2019
Selected Presenter, "Graduation Day" Session, *Information Theory & Applications Workshop* 2019
Finalist, Student Best Paper Award, *Asilomar Conference on Signals, Systems & Computers* 2017
National Science Foundation (NSF) Travel Award, *GlobalSIP* 2016
E. Bruce Lee Memorial Fellowship, *University of Minnesota – Twin Cities* 2014 – 2015
SciTechsperience Fellowship, *Minnesota High Tech Association* 2012
University Merit List, Third Place – ECE (Bronze Medal), *Uttarakhand Technical University, India* 2010
Proficiency Award for Academic Excellence, *COER, India* 2009 – 10
Proficiency Award for Academic Excellence, *COER, India* 2006 – 07

## Refereed Publications

[1] J. Park, K. Kaai, S. Hossain, N. Sumi, **S. Rambhatla**, P. Fieguth. Domain-Guided Spatio-Temporal Self-Attention for Egocentric 3D Pose Estimation. *ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD)*, 2023.

[2] G. Punchhi*, Y. Sun*, **S. Rambhatla**, M. Bhat. Deep Learning to Predict Trajectories and Identify Features Associated with Death and Transplant in Waitlisted NASH Patients. Canadian Donation and Transplantation Research Program (CDTRP) Annual Scientific Meeting, *Abstract*, 2022. **Selected for Oral Presentation**

[3] G. Punchhi*, Y. Sun*, **S. Rambhatla**, M. Bhat. Deep learning to predict trajectories and identify features associated with death and transplant in waitlisted NASH patients. American Association for the Study of Liver Diseases (AASLD), *Abstract*, 2022. **Selected for Oral Presentation**

[4] G. Punchhi*, Y. Sun*, **S. Rambhatla**, M. Bhat. Predicting Future Trajectories of the Waitlisted NASH patients using Deep Learning. International Liver Transplantation Society (ILTS) Annual Congress, *Abstract*, 2022. **Selected for Oral Presentation**

[5] **S. Rambhatla**, Z. Che, and Y. Liu. I-SEA: Importance Sampling and Expected Alignment-based Deep Distance Metric Learning for Time Series Analysis and Embedding. *36th Association for the Advancement of Artificial Intelligence (AAAI) conference on Artificial Intelligence*, 2022.

[6] A. B. Chen, T. Haque, S. Roberts, **S. Rambhatla**, G. Cacciamani, P. Dasgupta, A. J. Hung. Artificial Intelligence Applications in Urology: Reporting Standards to Achieve Fluency for Urologists. *Urology Clinics North America*, 2022.

[7] **S. Rambhatla***, S. Zeighami*, K. Shahabi, C. Shahabi, and Y. Liu. Towards Accurate Spatiotemporal COVID-19 Risk Scores using High Resolution Real-World Mobility Data. ACM Transactions on Spatial Algorithms and Systems (TSAS) , 2022. [Link]

[8] A. J. Hung, **S. Rambhatla**, D. I. Sanford, N. Pachauri, E. Vanstrum, J. H. Nguyen, and Y. Liu. Road to Automating Robotic Suturing Skills Assessment:Battling Mislabeling of the Ground Truth. *Surgery*, 2021.

[9] **S. Rambhatla***, S. Huang*, L. Trinh, M. Zhang, M. Dong, V. Unadkat, H. A. Yenikomshian, J. Gillenwater, and Y. Liu. `DL4Burn`: Burn surgical candidacy using multimodal deep learning. *American Medical Informatics Association (AMIA) Annual Symposium*, 2021.

[10] S. Huang*, **S. Rambhatla***, L. Trinh, M. Zhang, M. Dong, V. Unadkat, J. Lin, M. K. Sheth, J. Dang, H. A. Yenikomshian, Y. Liu, and J. Gillenwater. Predicting burn surgical candidacy using deep learning on photographic images. *Plastic Surgery: the Meeting*, *Abstract*, 2021. **Outstanding Presentation Award**

[11] C. Meng, **S. Rambhatla**, and Y. Liu. Cross-Node Federated Graph Neural Network for Spatio-Temporal Data Modeling. *ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD)*, 2021.

[12] N. Kamra, Y. Zhang, **S. Rambhatla**, C. Meng, and Y. Liu. PolSIRD: Modeling Epidemic Spread Under Intervention Policies: Analyzing the First Wave of COVID-19 in the USA. *Journal of Healthcare Informatics Research*, 2021. [Link]

[13] A. J. Hung, **S. Rambhatla**, N. Pachauri, D. I. Sanford, J. H. Nguyen, and Y. Liu. Automating suturing skills assessment with a limited surgeon dataset: Meta learning. *American Urology Association, Journal of Urology, Abstract*, 2021. **Selected for Podium Talk**

[14] S. Seo*, C. Meng*, **S. Rambhatla**, and Y. Liu. Physics-aware Spatiotemporal Modules with Auxiliary Tasks for Meta-Learning. *International Joint Conferences on Artificial Intelligence (IJCAI)*, 2021. [Link]

[15] L. Trinh, M. Tsang, **S. Rambhatla**, and Y. Liu. Interpretable and Trustworthy Deepfake Detection via Dynamic Prototypes. IEEE Winter Conference on Applications of Computer Vision (WACV), 2021. [Link]

[16] M. Tsang, **S. Rambhatla**, and Y. Liu. How does this interaction affect me? Interpretable attribution for feature interactions. *Advances in Neural Information Processing Systems (NeurIPS)*, 2020. [Link]

[17] **S. Rambhatla**, X. Li, and J. Haupt. Provable Online CP/PARAFAC Decomposition of a Structured Tensor via Dictionary Learning. *Advances in Neural Information Processing Systems (NeurIPS)*, 2020. [Link]

[18] **S. Rambhatla**, X. Li, J. Ren and J. Haupt. A Dictionary-Based Generalization of Robust PCA With Applications to Target Localization in Hyperspectral Imaging. *IEEE Transactions on Signal Processing*, vol. 68, pp. 1760 – 1775, 2020. [Link]

[19] **S. Rambhatla**, X. Li, and J. Haupt. NOODL: Provable Online Learning for Dictionary Learning and Sparse Coding. *International Conference on Learning Representations (ICLR)*, 2019. **Travel Award**. [Link]

[20] **S. Rambhatla**, N. Sidiropoulos, and J. Haupt. TensorMap: Lidar-based Topological Mapping and Localization via Tensor Decompositions. *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, 2018. [Link]

[21] X. Li, J. Ren, **S. Rambhatla**, Y. Xu, and J. Haupt. Robust PCA via Dictionary Based Outlier Pursuit. *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2018. [Link]

[22] **S. Rambhatla**, X. Li, and J. Haupt. Target Based Hyperspectral Demixing via Generalized Robust PCA. *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, 2017. **Student Best Paper Award Finalist**. [Link]

[23] **S. Rambhatla**, X. Li, and J. Haupt. A Dictionary Based Generalization of Robust PCA. *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, 2016. **National Science Foundation (NSF) Travel Award**. [Link]

[24] **S. Rambhatla** and J. Haupt. Semi-Blind Source Separation via Sparse Representations and Online Dictionary Learning. *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, 2013. [Link]

## Refereed Workshop and Demo Papers

[25] J. Park, F. Barnard, S. Hossain, **S. Rambhatla**. Implicit Stylization for Domain Adaptation. *Workshop on What do we need for successful domain generalization?, International Conference on Learning Representations (ICLR)*, 2023.

[26] J. Park, K. Kaai, S. Hossain, N. Sumi, **S. Rambhatla**, P. Fieguth. Building Spatio-temporal Transformers for Egocentric 3D Pose Estimation. *Joint International Workshop on Egocentric Perception, Interac-*

*tion and Computing (EPIC) and Ego4D, IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR)*, 2022. **Oral Presentation**.

[27] N. Xu*, L. Trinh*, **S. Rambhatla**, S. Assefa, J. Chen, Z. Zeng, and Y. Liu. Simulating continuous-time human mobility trajectories. *Deep Learning for Simulation Workshop, International Conference on Learning Representations (ICLR)*, 2021.

[28] S. Seo*, C. Meng*, **S. Rambhatla**, Y. Liu. Physics-aware Spatiotemporal Modules with Auxiliary Tasks for Meta-Learning. *Neural Information Processing Systems (NeurIPS) Workshop on Machine Learning and the Physical Sciences*, 2020. [Link]

## Manuscripts Under Review

[29] F. Barnard, M. V. Sittert, **S. Rambhatla**. Self-Diagnosis and Large Language Models: A New Front for Medical Misinformation, *Under Review*, 2023.

[30] A. Murugan, **S. Rambhatla**, A. Wong. Whose Health Matters in Healthcare Models? Unmasking Data Bias for Data-Aware Modeling. *Under Review*, 2023.

[31] K. Kaai, S. Hossain, B. Wang, **S. Rambhatla**. Domain Generalization for Domain-Linked Classes. *Under Review*, 2023.

[32] J. Park, F. Barnard, S. Hossain, **S. Rambhatla**, P. Fieguth. Is Generative Modeling-based Stylization Necessary for Domain Adaptation in Regression Tasks? *Under Review*, 2023.

[33] G. Punchhi*, Y. Sun*, **S. Rambhatla**, M. Bhat. DeepNASH: A Competing Risk Neural Network Model to Forecast NASH Patient Trajectories on the Liver Transplant Waitlist. *Journal Under Review*, 2023.

## Other Publications

[34] **S. Rambhatla**. Making Canadian Healthcare Systems "AI Ready": What Do We Need to Build AI-Powered Trustworthy Primary Healthcare Solutions? *Cybersecurity, Privacy, and Artificial Intelligence in Health Data: Advancements and Challenges Conference* (Invited Paper), 2023.

[35] V. Abdelzad, F. Barnard, K. Czarnecki, L. D'Souza, H. Gunraj, D. Mao, **S. Rambhatla**, M. V. Sittert, Y. V. Pant, A. Wong. Explainable AI and AI Bias in Connected and Automated Vehicles, *Report commissioned by Transport Canada* (141 pages), 2023.

[36] K. Sharma, S. Seo, C. Meng, **S. Rambhatla**, Y. Liu. COVID-19 on Social Media: Analyzing Misinformation in Twitter Conversations, *Report* 2020. [Link]

## Thesis

[37] **S. Rambhatla**. Provably Learning from Data: New Algorithms for Matrix/Tensor Decompositions & Factorizations. (Doctoral Thesis), *Department of Electrical and Computer Engineering, University of Minnesota – Twin Cities, Minneapolis, MN*, 2019.

[38] **S. Rambhatla**. Semi-Blind Source Separation via Sparse Approximation & Online Dictionary Learning. (Masters Thesis), *Department of Electrical and Computer Engineering, University of Minnesota – Twin Cities, Minneapolis, MN*, 2012.

* Equal contribution. Preprints/reprints available on `arxiv` and at `https://sirisharambhatla.com/publications/`.

## Research Grants

- *AI for Intelligent Production Monitoring* — $630,805
  — Sponsored Research Agreement with Apple Inc., Canada — 2023 – 27
  — **S. Rambhatla** (PI) — Awarded
  — *University of Waterloo, Waterloo, ON*

- *A Feasibility Study of Synthetic Health Data's Privacy, Utility, and Value* — $20,000
  — Cybersecurity and Privacy Institute (CPI) and Waterloo.AI Joint Seed Grant — 2023 – 24

— H. Chen (PI), M. Grossman (co-PI), A. Wong (co-PI), V. Ganesh (co-PI), A. Sen (co-PI), **S. Rambhatla** (co-PI), and X. He (co-PI) — Awarded
— *University of Waterloo, Waterloo, ON*

- *Data Analytics for Robust Crew Pairing* — $65,218
  — NSERC Alliance Program with Navblue Inc., ON, Canada — 2023 – 24
  — F. Gzara (PI), and **S. Rambhatla** (Co-PI) — Awarded
  — *University of Waterloo, Waterloo, ON*

- *Robot Learning from Demonstrations Under Attacks by Adversarial Experts* — $20,000
  — Cybersecurity and Privacy Institute (CPI) and Robohub Joint Seed Grant — 2023
  — Y. V. Pant (PI) and **S. Rambhatla** (co-PI) — Awarded
  — *University of Waterloo, Waterloo, ON*

- *Novel Video Analytics Through Advanced Deep Learning* — $14,253
  — *Compute Canada Resource Allocation (RAC)* — 2023 – 24
  — P. Fieguth (PI), **S. Rambhatla** (Co-PI) — Awarded
  — *University of Waterloo, Waterloo, ON*

- *AI for identifying and addressing inequities in the health systems* — $25,000
  — Graham Seed Funding to develop Transformative Health Technologies — 2023
  — A. Wong (PI) and **S. Rambhatla** (co-PI), C. Girolametto (Collaborator, GRH), Payal Agarwal (Collaborator, GRH) — Awarded
  — *University of Waterloo, Waterloo, ON*

- *AI to improve hospital workflows and improve patient outcomes* — $150,000
  — Sponsored Research Agreement with Grand River Hospital, Kitchener, ON — 2023 – 25
  — A. Wong (PI) and **S. Rambhatla** (co-PI) — Awarded
  — *University of Waterloo, Waterloo, ON*

- *AI Transparency in Connected Autonomous Vehicles Report* — $35,000
  — Transport Canada — 2022 – 23
  — K. Czarnecki (PI), A. Wong (Co-PI), S. Rambhatla (Co-PI), Y. V. Pant (Co-PI) — Awarded
  — *University of Waterloo, Waterloo, ON*

- *Data Analytics for Robust Crew Pairing* — $75,000
  — Sponsored Research Agreement with Navblue Inc., ON, Canada — 2022-24
  — F. Gzara (PI), and **S. Rambhatla** (Co-PI) — Awarded
  — *University of Waterloo, Waterloo, ON*

- *Automated Full-Game Ice Hockey Analytics* — $720,000
  — Alliance Grants - Mitacs Accelerate — 2023 – 26
  — Partner organization: Stathletes Inc. — Awarded
  — D. Clausi (PI), J. Zelek (Co-PI), **S. Rambhatla** (Co-PI), A. Wong (Co-PI), and M. J. Shafiee (Co-PI)
  — *University of Waterloo, Waterloo, ON*

- *Developing a Tool to Minimize Information Asymmetry Between Car Owner & Expert Mechanic* — $60,000
  — Mitacs Accelerate Grant with AutoCate/Miss Mechanic Inc. — 2022 – 23
  — *Mathematics of Information Technology and Complex Systems (MITACS)* — Awarded

- *Data Collection & Market Study of Women-Identifying Car Owners* — $30,000
  —Mitacs Business Strategy Internship (BSI) — 2022
  — Partner organization: AutoCate/Miss Mechanic Inc. — Awarded

— *Mathematics of Information Technology and Complex Systems (MITACS)*

- *Interpretable Time Series Representation Learning via Disentanglement and Domain Priors* $145,000
  — Discovery Grants Program 2022 – 27
  — *Natural Sciences and Engineering Research Council of Canada (NSERC)* Awarded

- *Interpretable Time Series Representation Learning via Disentanglement and Domain Priors* $12,500
  — Discovery Launch Supplement 2022 – 23
  — *Natural Sciences and Engineering Research Council of Canada (NSERC)* Awarded

- *Deep Learning for Human Pose Estimation* $50,000
  — Sponsored Research Agreement with Nissan AI and Mobility Lab, Japan Mar. 2022
  — **S. Rambhatla** (PI), P. Fieguth (co-PI), J. Zelek (co-PI), D. Clausi (co-PI), and A. Wong (co-PI)
  — *University of Waterloo, Waterloo, ON* Awarded

- *Novel Video Analytics Through Advanced Deep Learning* $11,230
  — *Compute Canada Resource Allocation (RAC)* 2022 – 23
  — P. Fieguth (PI), **S. Rambhatla** (Co-PI) Awarded
  — *University of Waterloo, Waterloo, ON*

- Start-up Grant $45,000
  — *University of Waterloo, Waterloo, ON* 2021–, Awarded

## Supervision & Mentoring

- *Graduate Supervision*
  - Chang Liu, *MASc Student, Systems Design Engineering* Sept. '23 – *Present*
    — Co-supervised with Prof. A. Wong
  - Yingke Wang, *MMath Student, David Cheriton School of Computer Science* Sept. '23 – *Present*
    — Co-supervised with Prof. X. He
  - Achint Soni, *MMath Student, David Cheriton School of Computer Science* Sept. '23 – *Present*
    — Co-supervised with Prof. C. Clarke
  - Kiernan McGuigan, *MASc Student, Systems Design Engineering* Sept. '23 – *Present*
    — Co-supervised with Prof. A. Scott
  - Bavesh Balaji, *MASc Student, Systems Design Engineering* Nov. '22 – *Present*
    — Co-supervised with Prof. D. Clausi
  - Anand Murugan, *MASc Student, Systems Design Engineering* Nov. '22 – *Present*
    — Co-supervised with Prof. A. Wong
  - Kimathi Kaai, *MASc Student, Systems Design Engineering* Sept. '22 – *Present*
    — Co-supervised with Prof. A. Wong
  - Aniket Biswal, *MASc Student, Management Sciences* Sept. '22 – *Present*
    — Co-supervised with Prof. F. Gzara

- *Graduate Mentoring*
  - Jinman Park, *Ph.D. Student, Systems Design Engineering* Nov. '21 – *Present*
    — Supervisors: Prof. P. Fieguth & Prof. D. Clausi

- *Undergraduate Supervision*
  - Daniel Jemin Kim, *URA, Computer Sciences* Spring '23 –
  - Bruce Wang, *URA, Mechanical and Mechatronics Engineering* Winter '23
  - Chang Liu, *URA, Statistics and Computational Mathematics* Fall '22 – Winter '23
  - Marlize Van Sittert, *URA, Faculty of Arts* Fall '22 – Winter '23
  - Francois Barnard, *URA, Management Sciences* Fall '22 – Winter '23

- Sheila Afros, *NSERC USRA, Management Sciences* Fall '22
- Madison Mussari, *URA, Software Engineering* Fall '22
- Joshua Kurien, *URA, Mechanical and Mechatronics Engineering* Fall '22
- Vivek Alamuri, *URA, Electrical and Computer Engineering* Fall '22
- Yipeng Du, *URA, Statistics and Computational Mathematics* Spring – Fall '22
- Mariam Sedik *Mitacs Business Strategy Intern* Spring – Fall '22
- Vanshaj Vohra *Mitacs Business Strategy Intern* Spring – Fall '22
- Kimathi Kaai, *URA, Mechanical and Mechatronics Engineering* Winter '22

- *Undergraduate Mentoring*
  - Saad Hossain, *URA, Biomedical Engineering* Winter '22 – *Present*
    — Supervisors: Prof. P. Fieguth

- *Other Supervision, Mentoring, and Collaborations*
  - Yingji Sun, *Machine Learning Analyst with the Bhat Lab* Dec. '22 – *Present*
    — *Ajmera Transplant Center, University Health Network, Toronto, ON, Canada* Research Mentor
  - María Belén Guaranda Cabezas, *Master's Student* Mar. '22 – *Present*
    — *Université Paris-Saclay, Paris, France* WiML Mentor
  - Pratik Bhowal, *Undergraduate Research Intern* Mar. '22 – *Present*
    — *National Institute of Technology, Jadhavpur, India and NVIDIA*

- *Final Year Design Team Supervision*
  - "Collaborative Selection Systems in Recruiting" 2022 – 23
    — Justine Archer, Francois Barnard, Arden Song, Christiana Wu, and Charles Yu MSCI 401
    — **Konrad Capstone Design Award**
    — **Management Engineering Design Award**
  - "AI-based Non-expert Assistive System" 2022 – 23
    — Gunchica Bhalla, Laurie Gao, Soohyun Kim, Ashwuni Kumar,and Olivia You MSCI 401
    — Industry partner: AutoCate Inc.
    — **Semi-Finalist for the Norman Esch Entrepreneurship Award for Capstone Design**
  - "Vysio: AI for improving Physiotherapy Adherence and Outcomes" 2021 – 22
    — Kimathi Kaai (MME), Peter Marshall (SyDE), Nathan Rowe (MME), and James Serez (SyDE)
    — **I-Beam Award** Interdisciplinary Group (GENE404)

## Service on Committees

- Research Advisory Committees in Canada
  — AI Transparency in Connected Autonomous Vehicles Report, *Transport Canada*, Dec. '22- Mar. '23
  — External Reviewer, Discovery Grants Program, *NSERC*, Dec. '22- Jan. '23

- University and Departmental Committees
  — Department Advisory Committee on Appointments (DACA), *Management Sciences*, 2022-23, 2023-24
  — Engineering Faculty Council (EFC), 2021-22, 2022-23
  — Engineering Representative to Arts Faculty Council, 2021-22, 2022-23

- Ph.D. Exam Committees
  — Arvin Hosseinzadeh, *MME*, Supervisor: Prof. A. Khajepour Sept., '23
  — Zhiying Jiang, *MME*, Supervisor: Prof. Jimmy Lin July, '23
  — Mohammedreza Ghobrani, *MME*, Supervisor: Prof. A. Khajepour April, '23
  — Amin Oji, *SyDE*, Supervisors: Prof. P. Fieguth Dec. '22
  — Kyle Gao, *SyDE*, Supervisors: Prof. J. Li & Prof. L. Zhu Dec. '22

— Shayan Shirahmad Gale Bagi, *ECE*, Supervisors: Prof. M. Crowley & Prof. K. Czarnecki Aug. '22

- Masters Thesis Committee
  - — Marjan Shahi *SyDE*, Supervisors: Prof. D. Clausi & Prof. J. Zelek Sept. '23
  - — Jason Shang *SyDE*, Supervisors: Prof. D. Clausi & Prof. J. Zelek Aug. '23
  - — Christopher Mannes *ECE*, Supervisors: Prof. K. Czarnecki May '23
  - — Marawan Abdel Hameed *SyDE*, Supervisors: Prof. D. Clausi & Prof. J. Zelek Aug. '22
  - — Mohammad Parsa, *MSCI*, Supervisor: Prof. L. Golub Jul. '22

## Teaching Experience

- Instructor, MSCI - 700 Foundations of Machine Learning (Class size: 12) Spring 2023
  - — *University of Waterloo, Waterloo, ON, Canada*
- Instructor, MSCI - 436 Decision Support Systems (Class size: 87) Spring 2023
  - — *University of Waterloo, Waterloo, ON, Canada*
- Instructor, MSCI - 546 Advanced Machine Learning (Class size: 56) Winter 2023
  - — *University of Waterloo, Waterloo, ON, Canada*
- Instructor, MSCI - 436 Decision Support Systems (Class size: 76) Spring 2022
  - — *University of Waterloo, Waterloo, ON, Canada*
- Instructor, CSCI 567 - Machine Learning (Class size: 85) Spring 2021
  - — *University of Southern California, Los Angeles, CA, U.S.A.*
- Guest Lecturer, CSCI 699 - Advanced Topics in Deep Learning (Class size: 40) Fall 2020
  - — *University of Southern California, Los Angeles, CA, U.S.A.*
- Guest Lecturer, EE 3025 - Statistical Methods in Elec. and Comp. Eng. (Class size: 150) Fall 2017
  - — *University of Minnesota – Twin Cities, Minneapolis, MN, U.S.A.*

## Technical Service

- Area Chair, *Neural Information Processing Systems (NeurIPS)* 2023
  - — *New Orleans, USA*
- Social and Engagement Co-Chair, *International Conference on Learning Representations (ICLR)* 2023
  - — *Kigali, Rwanda*
- Workshop Co-chair, *International Conference on COMmunication Systems & NETworkS (COMSNETS)*
  - — *Chancery Pavilion Hotel, Bangalore, India* Jan. 2023
- WiML Mentor, *Women in Machine Learning Workshop and Dreami* 2022
  - — *Women in Machine Learning (WiML)*
- Senior Program and Mentorship Co-chair, *Women in Machine Learning Workshop* 2021 – 22
  - — *Women in Machine Learning (WiML) at Neural Information Processing Systems (NeurIPS) 2021*
- Workshop Co-chair, *International Conference on COMmunication Systems & NETworkS (COMSNETS)*
  - — *Chancery Pavilion Hotel, Bangalore, India* Jan. 2022
- Organizer & Host, Computer Science Colloquium on "Algorithmic Fairness and the Law" Apr. 2021
  - — *University of Southern California, Los Angeles, CA*
- Organizer, AI for COVID-19 in LA Virtual Symposium (attended by over 350 participants) 2020
  - — *University of Southern California, Los Angeles, CA*
- Ambassador, Women in Data Science (WiDS) 2020
  - — *University of Southern California, Los Angeles, CA*
- Organizer, "Patent basics for Engineers and Researchers" 2019
  - — *Digital Technology Center, University of Minnesota–Twin Cities, Minneapolis, MN*
- Session Co-Chair, Reinforcement Learning, and High-dimensional Statistics 2019

— *Information Theory and Applications (ITA) Workshop 2019, San Diego, CA*

- Session Chair, Deep Learning-based Signal Processing for Wireless Communication 2018
  — *GlobalSIP 2018, Anaheim, CA*
- Program Committee, International Joint Conferences on Artificial Intelligence (IJCAI) 2023
- Program Committee, Association for the Advancement of Artificial Intelligence (AAAI) 2023, 2022, 2021
- Reviewer, International Conference on Learning Representations (ICLR) 2023, 2022, 2021
- Reviewer, Neural Information Processing Systems (NeurIPS) 2022, 2021, 2020
- Reviewer, International Conference on Machine Learning (ICML) 2022, 2021, 2020
- Reviewer, ACM Transactions on Spatial Algorithms and Systems (TSAS), 2022.
- Reviewer, Journal of Selected Topics in Signal Processing (JSTSP) 2020
- Reviewer, IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI) 2021, 2020
- Reviewer, ACM Transactions on Computing for Healthcare 2021, 2020
- Reviewer, International Conference on Artificial Intelligence & Statistics (AISTATS) 2018, 2016
- Reviewer, International Conference on Acoustics, Speech & Signal Processing (ICASSP) 2016, 2015
- Reviewer, Transactions on Signal Processing (T-SP) 2021, 2020, 2019, 2018, 2016, 2015, 2014
- Reviewer, Signal Processing Letters (SPL) 2017
- Reviewer, SIAM Journal of Imaging Sciences 2017
- Reviewer, Transactions on Industrial Informatics (T-II) 2017

## Talks/ Posters/ Media

- Sirisha Rambhatla's real-world machine learning revolution is just beginning Aug. 2023
  — Profile in CPI Spotlight Series, *Cybersecurity and Privacy Institute, University of Waterloo*
- Should I explain, or choose interpretable models? Building Trustworthy Models for Real-world Healthcare
  — Invited Talk, *Waterloo.AI's AI Literacy Mini-Series* June 2023
- Featured in the news article: *Cybersecurity, privacy and artificial intelligence in health* May 2023
  — *S. Toman, Waterloo News*
- Making Canadian Healthcare Systems "AI Ready": What Do We Need to Build AI-Powered Trustworthy Primary Healthcare Solutions? May 2023
  — Invited Talk, *the Cybersecurity, Privacy, and Artificial Intelligence in Health Data: Advancements and Challenges Conference, Ottawa, Canada*
- Featured in *Cybersecurity, privacy and artificial intelligence in health*
  — *S. Toman, Waterloo News* May 2023
- "The AI Tsunami: Where will it take us?" Jan. 2023
  —*Research Panel, Office of Research, University of Waterloo*
- Invited Speaker, Let's Talk AI Podcast Dec. 2022
  —*Waterloo AI Institute, University of Waterloo*
- "I-SEA: Importance Sampling and Expected Alignment-based Deep Distance Metric Learning for Time Series Analysis and Embedding" Nov. 2022
  —*Association for the Advancement of Artificial Intelligence (AAAI) conference*
- "Theory Guided Machine Learning for the Real World" Nov. 2021
  — *Vision and Image Processing lab, Systems Design Engineering Department, University of Waterloo.*

- "Cross-Node Federated Graph Neural Network for Spatio-Temporal Data Modeling" Aug. 2021
  — *ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD)*
- "Physics-aware Spatiotemporal Modules with Auxiliary Tasks for Meta-Learning" Aug. 2021
  — *International Joint Conferences on Artificial Intelligence (IJCAI).*
- "Provable Online CP/PARAFAC Decomposition via Dictionary Learning" Apr. 2021
  — *Women in Theoretical Machine Learning Symposium, Virtual Symposium.*
- "Provable Online CP/PARAFAC Decomposition via Dictionary Learning" Dec. 2020
  — *Neural Information Processing Systems (NeurIPS), Virtual Conference.*
- "How does this interaction affect me? Interpretable attribution for feature interactions." Dec. 2020
  — *Neural Information Processing Systems (NeurIPS), Virtual Conference.*
- "Provable Online Dictionary Learning and Sparse Coding" Jun. 2019
  — *CyberOptics Corporation, Minneapolis, MN.*
- "NOODL: Provable Online Dictionary Learning and Sparse Coding" May 2019
  — *International Conference on Learning Representations, New Orleans, LA.*
- "Provable Online Dictionary Learning and Sparse Coding" May 2019
  — *Department of Electrical and Computer Engineering, Georgia Tech., Atlanta, GA.*
- "Provable Online Dictionary Learning and Sparse Coding" Feb. 2019
  — *Information Theory and Applications (ITA) Workshop, San Diego, CA.*
- "Lidar-based Topological Mapping & Localization via Tensor Decompositions." Nov. 2018
  — *GlobalSIP 2018, Anaheim, CA.*
- "Provable Online Dictionary Learning and Matrix Factorization" Sept. 2018
  — *Digital Technology Center, Minneapolis, MN.*
- "Target-Based Hyper Spectral Demixing via Generalized Robust PCA." Mar. 2018
  — ECE Seminar on Signal Processing, Information Theory, and Communication,
  *University of Minnesota – Twin Cities, Minneapolis, MN.*
- "Provably Recovering Patterns from Data: Matrix to Tensors." Nov. 2017
  — *Yahoo! Research, San Jose, CA.*
- "Dictionary-based Generalization of Robust PCA." Dec. 2016
  — *GlobalSIP 2016, Washington D.C.*
- "Semi-Blind Source Separation via Sparse Approximation & Online Dictionary Learning."
  — *Asilomar Conference on Signals, Systems & Computers, Pacific Grove, CA.* Nov. 2013

## Software Packages

| | |
|---|---|
| `TensorNOODL`: | Provable Online CP/PARAFAC Decomposition via Dictionary Learning (MATLAB). |
| `NOODL`: | Provable Online Learning Algorithm for Dictionary Learning and Sparse Coding.<br>• Distributed implementations via MATLAB and TensorFlow. |
| `D-RPCA`: | Dictionary-Based Generalization of Robust PCA. (MATLAB)<br>• Analysis of Theoretical Properties, and Target Localization in Hyperspectral Images. |
| `TensorMap`: | Lidar-based Mapping and Localization via Tensor Decompositions. (MATLAB) |

## Professional Memberships

Member, *Association of Computer Machinery (ACM)* since 2021
Member, *IEEE*, since 2011