Shahana Ibrahim

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EDUCATION

Oregon State University — Corvallis, USA
PhD in Electrical and Computer Engineering — *Sep 2018 - July 2023*
Current GPA 4.0/4.0

Oregon State University — Corvallis, USA
Masters in Electrical and Computer Engineering — *Sep 2018 - Nov 2019*
Overall GPA 4.0/4.0

Texas A&M University — College Station, USA
Masters in Electrical and Computer Engineering (Transferred) — *Aug 2017 - May 2018*
Overall GPA 4.0/4.0

National Institute of Technology, Calicut — Kerala, India
Bachelors in Electronics and Communication Engineering — *Jun 2008 - May 2012*
Overall GPA 9.38/10.0

ACADEMIC & PROFESSIONAL EXPERIENCE

Oregon State University — Corvallis, USA
Research Assistant — *Sep 2018 - Present*

NVIDIA — Santa Clara, USA
GPU Validation Intern — *May 2018 - Aug 2018*

Texas A&M University — College Station, USA
Teaching Assistant — *Dec 2017 - May 2018*

Texas Instruments — Bangalore, India
System Validation Engineer — *Jul 2012 - Jun 2017*

SCHOLARLY WORKS

Conference Papers

C1. **Shahana Ibrahim**, Xiao Fu, Rebecca Hutchinson, and Eugen Seo *"Under-Counted Tensor Completion with Neural Incorporation of Attributes"*, accepted at International Conference on Machine Learning, 2023

C2. Tri Nguyen, **Shahana Ibrahim**, and Xiao Fu, *"Deep Clustering with Incomplete Noisy Pairwise Annotations: A Geometric Regularization Approach"*, accepted at International Conference on Machine Learning, 2023

C3. **Shahana Ibrahim**, Tri Nguyen, and Xiao Fu, *"Deep Learning From Crowdsourced Labels: Coupled Cross-entropy Minimization, Identifiability, and Regularization"*, International Conference on Learning Representations, 2023

C4. **Shahana Ibrahim** and Xiao Fu, *"Crowdsourcing via Annotator Co-occurrence Imputation and Provable Symmetric Nonnegative Matrix Factorization"*, Proceedings of the 38th International Conference on Machine Learning, 2021

C5. Wenqiang Pu, **Shahana Ibrahim**, Xiao Fu, and Mingyi Hong, *"Fiber-Sampled Stochastic Mirror Descent For Tensor Decomposition with β-Divergence"*, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2021

C6. **Shahana Ibrahim** and Xiao Fu, *"Learning Mixed Membership from Adjacency Graph via Systematic Edge Query: Identifiability and Algorithm"*, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2021

C7. Lingyi Huang, Chunhua Deng, **Shahana Ibrahim**, Xiao Fu, Bo Yuan, *"VLSI Hardware Architecture of Stochastic Low-rank Tensor Decomposition"*, Asilomar Conference on Signals, Systems, and Computers, 2021

C8. **Shahana Ibrahim** and Xiao Fu, *"Recovering Joint PMF from Pairwise Marginals"*, Asilomar Conference on Signals, Systems, and Computers, 2020

C9. **Shahana Ibrahim**, Xiao Fu, Nikos Kargas, and Kejun Huang "*Crowdsourcing via Pairwise Co-occurrences: Identifiability and Algorithms*", Advances in Neural Information Processing Systems, 2019

Journal Papers

J1. Wenqiang Pu, **Shahana Ibrahim**, Xiao Fu, and Mingyi Hong, *"Stochastic Mirror Descent for Low-Rank Tensor Decomposition Under Non-Euclidean Losses"*, IEEE Transactions on Signal Processing, 2022

J2. **Shahana Ibrahim** and Xiao Fu, *"Recovering Joint Probability of Discrete Random Variables from Pairwise Marginals"*, IEEE Transactions on Signal Processing, 2021

J3. **Shahana Ibrahim** and Xiao Fu, *"Mixed Membership Graph Clustering via Systematic Edge Query"*, IEEE Transactions on Signal Processing, 2021

J4. **Shahana Ibrahim**, Xiao Fu, and Xingguo Li, *"On Recoverability of Randomly Compressed Tensors with Low CP Rank"*, IEEE Signal Processing Letters, 2020

J5. Xiao Fu, **Shahana Ibrahim**, Hoi-To Wai, Cheng Gao, and Kejun Huang, *"Block-Randomized Stochastic Proximal Gradient for Low Rank Tensor Factorization"*, IEEE Transactions on Signal Processing, 2020

J6. **Shahana Ibrahim**, Dileep Kalathil, Rene Sanchez, and Pravin Varaiya, "*Estimating Phase Duration for SPAT messages*", IEEE Transactions on Intelligent Transportation Systems, 2019

Workshop Papers

W1. **Shahana Ibrahim**, Xiao Fu, Rebecca Hutchinson, and Eugen Seo, *"Under-Counted Tensor Completion with Neural Network-based Side Information Learner"*, NeurIPS Women in Machine Learning Workshop, 2022

W2. **Shahana Ibrahim** and Xiao Fu, *"Stochastic Optimization for Coupled Tensor Decomposition with Applications in Statistical Learning"*, IEEE Data Science Workshop (DSW), 2019

SKILL SET

- **Languages**: Python, Matlab, Perl, C, C++

– **Packages**: PyTorch, Scikit-Learn, Numpy, Pandas
– **AI System Design Tools**: Deep neural networks, Probabilistic models, Machine learning models and methods, Classical factorization models such as tensor factorization and nonnegative matrix factorization, Stochastic algorithm design
– **Mathematical Tools**: Linear algebra, Matrix algebra, Convex and nonconvex optimization
– **Operating Systems**: Windows, Unix

HONORS & AWARDS

Travel Grant, ICML Women in Machine Learning Workshop	2023
Travel Grant, NeurIPS Women in Machine Learning Workshop	2022
Area Chair, Women in Machine Learning Workshop, NeurIPS	2022
Selected Participant of Progress Workshop, ICIP	2020
Travel Grant, NeurIPS Conference	2019
NSF Travel Grant, IEEE Data Science Workshop	2019
ECEN Departmental Merit Scholarship, Texas A&M University	2017
Best Paper Award, Texas Instruments India Technical Conference	2017
Bachelors Second Rank, Electronics and Communication Engineering, NIT Calicut	2012
PM Foundation Fellowship	2008

TECHNICAL TALKS

Under-Counted Tensor Completion with Neural Incorporation of Attributes
SIAM OP23, Seattle, WA — *Jun 2023*

Learning from Noisy Labels with Theoretical Guarantees
Invited Talk, CSE, University of Texas, Arlington, TX — *Mar 2023*

Crowdsourcing via Annotator Co-occurrence Imputation &
Provable Symmetric Nonnegative Matrix Factorization
ICML, Virtual Talk — *Jul 2021*

Learning Mixed Membership from Adjacency Graph via
Systematic Edge Query: Identifiability and Algorithm
ICASSP, Virtual Talk — *Jun 2021*

Recovering Joint PMF from Pairwise Marginals
Asilomar Signal Processing Conference, Virtual Talk — *Nov 2020*

Stochastic Optimization for Coupled Tensor Decomposition with
Applications in Statistical Learning
IEEE Data Science Workshop, Minnesota, MN — *Jun 2019*

Crowdsourcing via Pairwise Co-occurrences: Identifiability & Algorithms
Artificial Intelligence Seminar, Oregon State University — *Mar 2019*

Crowdsourcing via Pairwise Co-occurrences: Identifiability & Algorithms
Signal Processing Seminar, Oregon State University — *Feb 2019*

TEACHING

Guest Lecturer, ECE586/AI586 Applied Matrix Analysis
EECS, Oregon State University, Corvallis, OR — *Spring 2023*

Guest Lecturer, ECE569/CS539 Convex Optimization
EECS, Oregon State University, Corvallis, OR — *Fall 2020*

STUDENT ADVISING & MENTORING

Thesis Committe Member
Daniel Grey Wolnick
Bachelor of Science in Computer Science
Oregon State University — *2022 - 2023*

Research Mentor
Ezra Baker
Bachelor of Science in Mathematics & Computer Science
Oregon State University — *2022*

Research Mentor
Grace Strid
Bachelor of Science in Mathematics
Oregon State University — *2020*

COURSES

Intelligent Agents & Decisions	Spring 2020
Contemporary Energy Applications	Fall 2019
Nonlinear Optimization	Spring 2019
Stochastic Signals & Systems	Winter 2019
Deep Learning, Oregon State University	Winter 2019
Estimation, Filtering, and Detection, Oregon State University	Fall 2018
Linear Systems, Oregon State University	Fall 2018
Stochastic Systems, Texas A&M Unuversity	Spring 2018
Introduction to Classical Analysis, Texas A&M University	Spring 2018
Probability for Engineering Decisions, Texas A&M University	Fall 2017
Convex Optimization, Texas A&M University	Fall 2017
Linear Network Analysis, Texas A&M University	Fall 2017

REVIEWING

Reviewer, IEEE Transactions on Pattern Analysis and Machine Intelligence	2023
Reviewer, EUSIPCO	2023
Reviewer, IEEE Statistical Signal Processing Workshop	2023
Reviewer, IEEE Transactions of Signal Processing	2023
Reviewer, AISTATS	2023
Auxilliary Reviewer, ICASSP	2023
Reviewer, AISTATS	2022
Reviewer, Journal of Optimization Theory & Applications	2022
Reviewer, Journal of Selected Topics in Signal Processing	2021

Auxilliary Reviewer, ICASSP 2021
Reviewer, AISTATS 2019
Auxilliary Reviewer, IEEE MLSP Worskshop 2019

OUTREACH

Student Member
Women in Machine Learning *2021 - present*

Student Member
IEEE Signal Processing Society *2019 - present*

Program Co-ordinator
Texas Instruments Community Service Forum *2013 - 2017*

Student Co-ordinator
Pain & Palliative Care Unit, NIT Calicut *2009 - 2012*

REFERENCES

Dr. Xiao Fu
Assistant Professor
School of Electrical Engineering & Computer Science ✉ xiao.fu@oregonstate.edu
Oregon State University, Corvallis, OR 97331 ☎ 541-737-3925

Dr. Rebecca Hutchinson
Associate Professor
Fisheries & Wildlife, Computer Science ✉ rebecca.hutchinson@oregonstate.edu
Oregon State University, Corvallis, OR 97331 ☎ 541-737-4550

Dr. Mingyi Hong
Associate Professor
Department of Electrical & Computer Engineering ✉ mhong@umn.edu
University of Minnesota, Minneapolis, MN 55455 ☎ 612-625-3505

Dr. Raviv Raich
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School of Electrical Engineering & Computer Science ✉ raich@eecs.oregonstate.edu
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Dr. Dileep Kalathil
Assistant Professor
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