# Shahana Ibrahim

#427, L3Harris Corporation Engineering Center,
4328 Scorpius St,
Orlando, FL 32816

✉ shahana.ibrahim@ucf.edu
🏠 http://shahanaibrahimosu.github.io
☎ 979-703-0191

## EDUCATION

**Oregon State University** — Corvallis, USA
*PhD in Electrical and Computer Engineering* — *09 Sep 2018 - 08 Sep 2023*
**Overall GPA** 4.0/4.0

**Oregon State University** — Corvallis, USA
*Masters in Electrical and Computer Engineering* — *09 Sep 2018 - 13 Dec 2019*
**Overall GPA** 4.0/4.0

**National Institute of Technology, Calicut** — Kerala, India
*Bachelors in Electronics and Communication Engineering* — *23 Jul 2008 - 01 May 2012*
**Overall GPA** 9.38/10.0

## ACADEMIC & PROFESSIONAL EXPERIENCE

**University of Central Florida** — Orlando, USA
*Assistant Professor* — *21 Dec 2023 - Present*

**Oregon State University** — Corvallis, USA
*Research Associate* — *08 Sep 2023 - 20 Dec 2023*

**Oregon State University** — Corvallis, USA
*Research Assistant* — *09 Sep 2018 - 27 Aug 2023*

**NVIDIA** — Santa Clara, USA
*GPU Validation Intern* — *14 May 2018 - 17 Aug 2018*

**Texas A&M University** — College Station, USA
*Grader* — *11 Sep 2017 - 13 May 2018*

**Texas Instruments** — Bangalore, India
*System Validation Engineer* — *02 Jul 2012 - 10 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"*, 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"*, 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 $\beta$-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.** **Daniel Grey Wolnick**, **Shahana Ibrahim**, Tim Marrinan, and Xiao Fu, *"Deep Learning from Noisy Labels via Robust Nonnegative Matrix Factorization-Based Design"*, IEEE CAMSAP Workshop, 2023

**W2.** **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

**W3.** **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

| | |
|---|---|
| Selected Pariticipant & Travel Grant, NSF Workshop | 2024 |
| 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

Provably Robust Learning: A Tale of Tackling Label Noise through Naïve Bayes to Deep Neural Networks
*Invited Talk, Washington State University, Pullman, WA* — *Aug 2023*

Towards Efficient Learning under Label Noise: From Dawid-Skene to Deep Neural Networks
*Invited Talk, AI Initiative, University of Central Florida, Orlando, FL* — *Jun 2023*

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 of Signal Processing — 2024
Program Committee, AISTATS — 2024
Program Committee, AAAI Conference on Artificial Intelligence — 2024
Reviewer, Signal Processing — 2023
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**
*Associate Professor*
*School of Electrical Engineering & Computer Science* ✉ raich@eecs.oregonstate.edu
*Oregon State University, Corvallis, OR 97331* ☎ 541-737-9862

**Dr. Dileep Kalathil**
*Assistant Professor*
*Department of Electrical & Computer Engineering* ✉ dileep.kalathil@tamu.edu
*Texas A&M University, College Station, TX 77843* ☎ 979-458-7884