

Jwala Dhamala

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Research interests	Deep learning, Machine learning, Natural language understanding, Fair, interpretable and robust models, Healthcare applications.	
Education	Ph.D. in Computing and Information Sciences Rochester Institute of Technology, Rochester, NY, US Advisor: Dr. Linwei Wang	2014 - 2020 GPA: 3.93/4.00
	B.E. in Computer Engineering Pulchowk Campus, Tribhuvan University, Nepal	2008 - 2012 with Distinction
Experience	Applied Scientist Alexa AI - Natural Language Understanding Cambridge, MA, US	2019 - Present
	Research Assistant Computational Biomedicine Lab Rochester Institute of Technology, NY, US Research focus: Machine/deep learning approaches to integrate measurements with physics-based simulations for probabilistic personalization of the simulation models. Experience with machine learning methods like Gaussian processes, Bayesian optimization and MCMC; and deep learning methods like variational auto-encoders (VAE) and geometric deep learning.	2014 - 2019
	Research Intern Philips Healthcare, Cambridge, MA, US Research focus: Unsupervised representation learning and similarity assessment of multi-variate time-series physiological signals. Experience with RNNs, LSTMs and approximate nearest neighbor methods.	2018
	Software Engineer Business Intelligence Department Logic Information Systems, Nepal Focus: Worked and lead projects on ETL for data warehousing and statistical data analysis for business intelligence dashboards. Designed and conducted training sessions for interns.	2012 - 2014
	Research Intern Business Intelligence Department Logic Information Systems, Nepal Research Focus: Data mining and data visualization. Experience with clustering, market basket analysis and multilayered perception.	2012
Journal articles	Fast Posterior Estimation of Cardiac Electrophysiological Model Parameters via Bayesian Active Learning M. Zaman, J. Dhamala , P. Bajracharya, H. J. Arevalo, J. Sapp, M. Horáček, K. C. Wu, N. A. Trayanova & L. Wang <i>Medical Image Analysis (MedIA)</i> , 2020, invited	
	Embedding High-dimensional Bayesian Optimization via Generative Modeling: Parameter Personalization of Cardiac Electrophysiological Models J. Dhamala , H. J. Arevalo, J. Sapp, M. Horáček, K. C. Wu, N. A. Trayanova & L. Wang <i>Medical Image Analysis (MedIA)</i> , 2020, invited	
	Quantifying the Uncertainty in Model Parameters using Gaussian Process-based	

Markov Chain Monte Carlo in Cardiac Electrophysiology

J. Dhamala, H. J. Arevalo, J. Sapp, M. Horáček, K. C. Wu, N. A. Trayanova & L. Wang
Medical Image Analysis (MedIA), 2018

Multivariate Time-series Similarity Assessment via Unsupervised Representation Learning and Stratified Locality Sensitive Hashing: Application to Early Acute Hypotensive Episode Detection

J. Dhamala, E. Azuh, A. Al-Dujaili, J. Rubin & U. M. O'Reilly
IEEE Sensors Letters, 2018

Spatially Adaptive Multi-scale Optimization for Local Parameter Estimation in Cardiac Electrophysiology

J. Dhamala, H. J. Arevalo, J. Sapp, M. Horáček, K. C. Wu, N. A. Trayanova & L. Wang
IEEE Transactions on Medical Imaging (IEEE TMI), 2017

Conference articles

On the Intrinsic and Extrinsic Fairness Evaluation Metrics for Contextualized Language Representations

Y. Trista Cao, Y. Pruksachatkun, K. Chang, R. Gupta, V. Kumar, J. Dhamala, A. Galstyan
Association for Computational Linguistics (ACL), 2022

Mitigating Gender Bias in Distilled Language Models via Counterfactual Role Reversal

U. Gupta, J. Dhamala, V. Kumar, A. Verma, Y. Pruksachatkun, S. Krishna, R. Gupta, K. Chang, G. Steeg & A. Galstyan
Association for Computational Linguistics (ACL findings), 2022

Measuring Fairness of Text Classifiers via Prediction Sensitivity

S. Krishna, R. Gupta, A. Verma, J. Dhamala, Y. Pruksachatkun & K. Chang
Association for Computational Linguistics (ACL), 2022

Does Robustness Improve Fairness? Approaching Fairness with Word Substitution Robustness Methods for Text Classification

Y. Pruksachatkun, S. Krishna, J. Dhamala, R. Gupta & K. Chang
North American Chapter of the Association for Computational Linguistics (NAACL findings), 2021

BOLD: Dataset and Metrics for Measuring Biases in Open-Ended Language Generation

J. Dhamala*, T. Sun*, V. Kumar, S. Krishna, Y. Pruksachatkun, K. Chang & R. Gupta
ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT), 2021

Learning Geometry-Dependent and Physics-Based Inverse Image Reconstruction

X. Jiang, S. Ghimire, J. Dhamala, Z. Li, P. K. Gyawali & L. Wang
Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2020

Bayesian Optimization on Large Graphs via a Graph Convolutional Generative Model: Application in Cardiac Model Personalization

J. Dhamala, S. Ghimire, J. L. Sapp, B. M. Horáček & L. Wang
Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2019
early acceptance (selection rate $\sim 15\%$), finalist for young scientist award

Improving Generalization of Deep Networks for Inverse Reconstruction of Image Sequences

S. Ghimire, P. K. Gyawali, J. Dhamala, J. L. Sapp, J. L., Horáček, M., and Wang, L.
Information Processing in Medical Imaging (IPMI), 2019
oral presentation

High-dimensional Bayesian Optimization of Personalized Cardiac Model Parameters via an Embedded Generative Model

J. Dhamala, S. Ghimire, J. L. Sapp, B. M. Horáček & L. Wang
Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2018
oral presentation, finalist for young scientist award (selection rate $\sim 1\%$)

Generative Modeling and Inverse Imaging of Cardiac Transmembrane Potential
S. Ghimire, **J. Dhamala**, P. K. Gyawali, J. L. Sapp, B. M. Horáček & L. Wang
Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2018

Quantifying the Uncertainty in Model Parameters using Gaussian Process-based Markov Chain Monte Carlo: an Application to Cardiac Electrophysiological Models
J. Dhamala, J. L. Sapp, B. M. Horáček & L. Wang
Information Processing in Medical Imaging (IPMI), 2017
acceptance rate \sim 30%

Overcoming Barriers to Quantification and Comparison of Electrocardiographic Imaging Methods: a Community-based Approach
S. Ghimire, **J. Dhamala**, J. Coll-Font, J. D. Tate, M. S. Guillem, D. H. Brooks, R. S. MacLeod & L. Wang
Computing in Cardiology (CinC), 2017

The Consortium for Electrocardiographic Imaging
J. Coll-Font, **J. Dhamala**, D. Potyagaylo, W. H. Schulze, J. D. Tate, M. S. Guillem, P. Van Dam, O. Dossel, D. H. Brooks & R. S. Macleod
Computing in Cardiology (CinC), 2016

Spatially-adaptive Multi-scale Optimization for Local Parameter Estimation: Application in Cardiac Electrophysiological Models
J. Dhamala, J. L. Sapp, B. M. Horáček & L. Wang
Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2016
early acceptance, selection rate \sim 10%

Technical skills

Languages: Python, MATLAB
Deep Learning Framework: PyTorch
Misc: Bash scripting, L^AT_EX typesetting, Git
Basic familiarity: R, Java, C, C++, HTML, PHP, MySQL

Workshop articles

Evaluating the Effectiveness of Efficient Neural Architecture Search for Sentence-Pair Tasks
A. MacLaughlin, **J. Dhamala**, A. Kumar, S. Venkatapathy, R. Venkatesan & R. Gupta
Workshop on Insights from Negative Results in NLP, EMNLP, 2021

High-dimensional Bayesian Optimization of Personalized Cardiac Model Parameters via an Embedded Generative Model
J. Dhamala, S. Ghimire, J. L. Sapp, B. M. Horáček & L. Wang
Women in Machine Learning (WiML), 2018

Multivariate Time-series Similarity Assessment via Unsupervised Representation Learning and Stratified Locality Sensitive Hashing: Application to Early Acute Hypotensive Episode Detection
J. Dhamala, E. Azuh, A. Al-Dujaili, J. Rubin, and U. M. O'Reilly.
NeurIPS Machine Learning in Healthcare (NeurIPS ML4H), 2018

Scholarships & awards

Travel Grant, NeurIPS Machine learning for Health Workshop (ML4H) 2018
Travel Grant, Woman in Machine Learning (WiML) 2018
Travel Grant, MICCAI 2016, 2018
IPMI Scholarship for Junior Scientists, IPMI 2017
GCCIS Student Grant, Rochester Institute of Technology 2017
Graduate Student Travel Award, Rochester Institute of Technology 2015
Women in Engineering Scholarship, University Grants Commission, Nepal 2010-2011
The College Fellowship Scholarship, Granted 8/8 semesters based on academic merit, Tribhuvan University 2008-2012
Golden Jubilee Scholarship, Government of India 2008-2012
Full-tuition waiver, Based on the performance on a countrywide university entrance examination, Institute of Engineering,

	Tribhuvan University	2008-2012
	Mahatma Gandhi Scholarship , Government of India	2006-2007
Professional activities	Reviewing	
	Conference: ACL ARR	2021-present
	Conference: NeurIPS	2021
	Journal: Data Mining and Knowledge Discovery (Springer)	2021
	Journal: Engineering Applications of Artificial Intelligence (Elsevier)	2021
	Conference: MICCAI	2017-2021
	Workshop: Woman in Machine Learning (WiML)	2018
	Journal: IEEE Sensors Letters	2018
	Journal: Journal of Biomedical and Health Informatics	2018
	Journal: Engineering Applications of Artificial Intelligence	2021
	Organization	
	TrustNLP: Workshop on Trustworthy Natural Language Processing	2021, 2022
	North American Chapter of the Association for Computational Linguistics (NAACL)	
	Workshop on Measures and Best Practices for Responsible AI	2021
	ACM SIGKDD Conference on Knowledge Discovery and Data Mining	
	Pre-orientation program	2017
	Woman in Computing, Rochester Institute of Technology	
	Workshop on Premature Ventricular Contractions Localization	2016, 2017
	Computing in Cardiology, Consortium of Electrocardiographic Imaging	
	LOCUS - Technological Festival	2012
	Institute of Engineering, Pulchowk Campus	
Invited talks	Fairness in Open-ended Language Generation	
	Workshop on Women in Science: Status, Challenges, Opportunities and Innovations, 2021	
	NEGAAS, Kathmandu, (Online Event)	
	Applications of Artificial Intelligence for Social Good	
	Women in Data Science (WiDS), 2021	
	Kathmandu, Nepal (Online Event)	
	Applications of Deep Learning to Multi-scale Physics-based Simulators	
	National Workshop on Machine Learning and Data Science, 2020	
	Kathmandu, Nepal (Online Event)	
	Model Personalization and Uncertainty Quantification in Cardiac Electrophysiological Models	
	Ph.D. Colloquium Series, 2018	
	College of Computing and Information Sciences, Rochester Institute of Technology	
	Rochester, NY, US	
	Personalization and Uncertainty Quantification in Cardiac Electrophysiological Models	
	Signal Processing Imaging Reasoning and Learning (SPIRAL) Seminar, 2018	
	Northeastern University, Boston, MA, US	