

Jwala Dhamala

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Research Interests

- Deep learning, Machine learning, Sequential decision-making under uncertainty, Bayesian optimization, Inference and uncertainty quantification in simulation models, Healthcare applications.

Education

- Aug 2014 – Present **Ph.D. in Computing and Information Sciences (GPA: 3.94/4.00)**
Rochester Institute of Technology, Rochester, NY, US
Advisor: Dr. Linwei Wang
Research focus: Personalization and uncertainty quantification in cardiac electrophysiological models through the integration of physics-based modeling and data-driven inference methods.
- Oct 2008 – Dec 2012 **B.E. in Computer Engineering (with Distinction)**
Pulchowk Campus, Tribhuvan University, Nepal

Experience

- Aug 2014 – Present **Research Assistant.** Computational Biomedicine Lab. Golisano College of Computing and Information Sciences (GCCIS). Rochester Institute of Technology, NY, US.
- May 2018 – Aug 2018 **Research Intern.** Philips Healthcare. Cambridge, MA, US.
- Nov 2012 – Apr 2014 **Software Engineer.** Business Intelligence Department. Logic Information Systems. Kathmandu, Nepal.
- Sep 2012 – Nov 2012 **Intern.** Business Intelligence Department. Logic Information Systems. Kathmandu, Nepal.

Research Publications

Journal Articles

- Dhamala, J., Arevalo, H. J., Sapp, J., Horáček, B. M., Wu, K. C., Trayanova, N. A., & Wang, L. (n.d.).** High-dimensional bayesian optimization via an embedded generative model: an application to cardiac electrophysiological model personalization. *Medical image analysis, in preparation, invited.*
- Dhamala, J., Arevalo, H. J., Sapp, J., Horáček, B. M., Wu, K. C., Trayanova, N. A., & Wang, L. (2018).** Quantifying the uncertainty in model parameters using gaussian process-based markov chain monte carlo in cardiac electrophysiology. *Medical image analysis, 48*, 43–57.
- Dhamala, J., Azuh, E., Al-Dujaili, A., Rubin, J., & O'Reilly, U.-M. (2018).** Multivariate time-series similarity assessment via unsupervised representation learning and stratified locality sensitive hashing: application to early acute hypotensive episode detection. *IEEE Sensors Letters.*
- Dhamala, J., Arevalo, H. J., Sapp, J., Horáček, M., Wu, K. C., Trayanova, N. A., & Wang, L. (2017).** Spatially adaptive multi-scale optimization for local parameter estimation in cardiac electrophysiology. *IEEE transactions on medical imaging (IEEE TMI), 36(9)*, 1966–1978.

Conference Articles

- 1 **Dhamala, J., Ghimire, S., Sapp, J. L., Horáček, B. M., & Wang, L. (2018).** High-dimensional bayesian optimization of personalized cardiac model parameters via an embedded generative model. In *International conference on medical image computing and computer-assisted intervention (MICCAI)* (pp. 499–507). Springer. **Oral presentation (acceptance rate ~ 4%), Nominated for Young Scientist Award.**
- 2 Ghimire, S., **Dhamala, J.,** Gyawali, P. K., Sapp, J. L., Horáček, M., & Wang, L. (2018). Generative modeling and inverse imaging of cardiac transmembrane potential. In *International conference on medical image computing and computer-assisted intervention (MICCAI)* (pp. 508–516). Springer.
- 3 **Dhamala, J.,** Sapp, J. L., Horáček, M., & Wang, L. (2017). Quantifying the uncertainty in model parameters using gaussian process-based markov chain monte carlo: an application to cardiac electrophysiological models. In *International conference on information processing in medical imaging (IPMI)* (pp. 223–235). Springer. **(acceptance rate ~ 30%).**
- 4 Ghimire, S., **Dhamala, J.,** Coll-Font, J., Tate, J. D., Guillem, M. S., Brooks, D. H., ... Wang, L. (2017). Overcoming barriers to quantification and comparison of electrocardiographic imaging methods: a community-based approach. In *Computing in cardiology conference (CinC), 2017* (Vol. 44, p. 1). IEEE.
- 5 Coll-Font, J., **Dhamala, J.,** Potyagaylo, D., Schulze, W. H., Tate, J. D., Guillem, M. S., ... Macleod, R. S. (2016). The consortium for electrocardiographic imaging. In *Computing in cardiology conference (CinC), 2016* (pp. 325–328). IEEE.
- 6 **Dhamala, J.,** Sapp, J. L., Horáček, M., & Wang, L. (2016). Spatially-adaptive multi-scale optimization for local parameter estimation: application in cardiac electrophysiological models. In *International conference on medical image computing and computer-assisted intervention (MICCAI)* (pp. 282–290). Springer. **Early accepted (acceptance rate ~ 20%).**

Workshop Articles

- 1 **Dhamala, J.,** Azuh, E., Al-Dujaili, A., Rubin, J., & O'Reilly, U. (2018). Multivariate time-series similarity assessment via unsupervised representation learning and stratified locality sensitive hashing: application to early acute hypotensive episode detection. *NeurIPS 2018 Machine Learning in Healthcare Workshop (NeurIPS ML4H)*.
- 2 **Dhamala, J. & Wang, L. (2018).** High-dimensional bayesian optimization of personalized cardiac electrophysiological model parameters via an embedded generative model. *Women in Machine Learning Workshop 2018 (WiML 2018)*.

Scholarships and Awards

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| 2018 | <ul style="list-style-type: none"> ■ NeurIPS ML4H Travel Grant. Machine learning for Health Workshop, Canada. ■ WiML 2018 Travel Grant. Woman in Machine Learning (WiML), Canada. |
| 2016, 2018 | <ul style="list-style-type: none"> ■ MICCAI Travel Award. MICCAI 2016, Greece; and MICCAI 2018, Spain. |
| 2017 | <ul style="list-style-type: none"> ■ IPMI Scholarship for Junior Scientists. IPMI 2017, North Carolina, US. ■ GCCIS Student Grant. Rochester Institute of Technology, US. |
| 2015 | <ul style="list-style-type: none"> ■ Graduate Student Travel Award. Rochester Institute of Technology, US. |
| 2010-2011 | <ul style="list-style-type: none"> ■ Women in Engineering Scholarship. University Grants Commission, Nepal. |
| 2008-2012 | <ul style="list-style-type: none"> ■ The College Fellowship Scholarship. Tribhuvan University, Nepal.
Granted 8/8 semesters based on academic merit of each semester |
| 2008-2009 | <ul style="list-style-type: none"> ■ Golden Jubilee Scholarship. Government of India. |
| 2008-2012 | <ul style="list-style-type: none"> ■ Full-tuition waiver. Institute of Engineering, Tribhuvan University, Nepal. |
| 2006-2007 | <ul style="list-style-type: none"> ■ Mahatma Gandhi Scholarship. Government of India. |

Skills

Languages	📌 English (Fluent), Nepali (Native), Hindi (Basic)
Coding	📌 Python, MATLAB, R
Deep Learning Frameworks	📌 PyTorch
Databases and BI tools	📌 MySQL, OBIEE, ODI, BI Publisher
Misc.	📌 Bash scripting, \LaTeX typesetting

Professional Activities

Reviewing

- 2017, 2018 📌 MICCAI
- 2018 📌 WiML Workshop
- 📌 IEEE Sensors Letters

Organization

- Nov, 2017 📌 Pre-orientation program by Women in Computing. Golisano College of Computing and Information Sciences, Rochester Institute of Technology, US.
- 2016, 2017 📌 Workshop on Premature Ventricular Contractions Localization alongside Computing in Cardiology (CinC). Consortium of Electrocardiographic Imaging.
- Nov, 2012 📌 LOCUS – Technological festival. Institute of Engineering, Tribhuvan University, Nepal.

Invited Talks

- Apr, 2018 📌 Model Personalization and Uncertainty Quantification in Cardiac Electrophysiological Models. *Ph.D. Colloquium Series. Golisano College of Computing and Information Sciences, Rochester Institute of Technology, NY, US.*
- July, 2018 📌 Personalization and Uncertainty Quantification in Cardiac Electrophysiological Models. *Signal Processing Imaging Reasoning and Learning (SPIRAL) Seminar. Northeastern University, Boston, MA, US.*