PRASHNNA KUMAR GYAWALI

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468 Clay Rd (Apt C), Rochester, NY, 14623

RESEARCH INTERESTS

Machine Learning (Deep Learning, Representation Learning, Generative Modeling); Signal Processing

EDUCATION

2016 – Present
Doctor of Philosophy, Computing and Information Sciences
Golisano College of Computing and Information Sciences
Rochester Institute of Technology, Rochester, NY
Relevant Courses: Statistical Machine Learning, Deep Learning for Vision, Quantitative Foundation, Research Foundation, Software Engineering, Human Computer Interaction

2015
Transdisciplinary Innovation Program
Hebrew University of Jerusalem, Israel
One of the 16 global students in 10 weeks program featuring 14 Nobel Laureates, computer scientists, industry experts and entrepreneurs
Project: 12-second video news teaser from the full-length news article – Feasibility study of automatic summary generation from the text and corresponding video synthesis for the summarized text.
Relevant Courses: Computer Vision, Cyber Security, Big data

2011 - 2014
Bachelor of Engineering, Electronics and Communication
Institute of Engineering, Pulchowk Campus
Tribhuvan University, Lalitpur, Nepal
Thesis: Speed detection and license plate recognition – Integration of hardware for speed detection and image acquisition and AI tools for automatic license plate recognition. Collaborated with Traffic Unit, Nepal Police.
Relevant Courses: Mathematics I, II, III, IV, Probability and Statistics, Physics, Computer Programming I, II, Numerical Methods, Signal Analysis, Digital Signal Processing, Image Processing and Patter Recognition

EXPERIENCE

2016 – Present
Research Assistant
Computational Biomedicine Lab (C.B.L.), Rochester Institute of Technology
Advisor: Dr. Linwei Wang

2019 Summer
AI/ML Research Intern
AI Lab, Verisk Analytics
Advisor: Dr. Maneesh Singh

2015 - 2016
Assistant Lecturer
Department of Electronics and Computer Engineering, Institute of Engineering, Thapathali Campus
Course Assigned: "Image Processing and Pattern Recognition"
Teaching responsibilities for the assigned courses and lab sessions.

2015 - 2016 **Assistant Lecturer**
Department of Electronics and Computer Engineering, Himalaya College of Engineering
Course Assigned: "Image Processing and Pattern Recognition"
Teaching responsibilities for the assigned courses and lab sessions.

2014 - 2015 **Jr. Biometric Software Engineer**
TekTak Pvt. Ltd., Kathmandu
Project:

1. Face recognition/verification on Deep Learning framework
   Worked as a developer for deep learning modules in C++/Caffe framework and as dataset manager
2. Event management system
   Worked as an algorithm developer and as a software developer in Java to prepare the routing and scheduling system

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLE

J.1 **Prashnna K Gyawali**, B. Milan Horacek, John L. Sapp, Linwei Wang. 2019. "Sequential Factorized Autoencoder for Localizing the Origin of Ventricular Activation From 12-Lead Electrocardiogram". IEEE Transactions on Biomedical Engineering (TBE 2019).

PEER-REVIEWED CONFERENCE ARTICLES

P.12 Zhiyual Li, Jaideep Vitthal Murkute, **Prashnna K Gyawali**, Linwei Wang. 2019. "Progressive Learning and Disentanglement of Hierarchical Representations". International Conference on Learning Representations. (ICLR 2020). (*accepted for oral*)

P.11 **Prashnna K Gyawali**, Zhiyuan Li, Cameron Knight, Sandesh Ghimire, B. Milan Horacek, John L. Sapp, Linwei Wang. 2019. "Improving Disentangled Representation Learning with the Beta Bernoulli Process". International Conference on Data Mining. (ICDM 2019). (oral)

P.10 **Prashnna K Gyawali***, Zhiyuan Li*, Sandesh Ghimire, Linwei Wang. 2019. "Semi-Supervised Learning by Disentangling and Self-Ensembling over Stochastic Latent Space." International Conference on Medical Image Computing & Computer Assisted Intervention. (MICCAI 2019). (* equal contribution)

P.9 Sandesh Ghimire, **Prashnna K Gyawali**, Jwala Dhamala, John L. Sapp, B. Milan Horacek, Linwei Wang. 2019. "Improving Generalization of Deep Networks for Inverse Reconstruction of Image Sequences." Proceedings of International Conference on Information Processing in Medical Imaging. (IPMI 2019). (oral)

P.8 **Prashnna K Gyawali**, Cameron Knight, Sandesh Ghimire, John L. Sapp, B. Milan Horacek, Linwei Wang. 2018. "Deep Generative Model with Beta Bernoulli Process for Modeling and Learning Confounding Factors". All of Bayesian Nonparameteric Workshop at NeurIPS 2018. (BNP@NeurIPS 2018).

P.7 Sandesh Ghimire, Jwala Dhamala, **Prashnna K Gyawali**, John L. Sapp, B. Milan Horacek, Linwei Wang. 2018. "Generative Modeling and Inverse Imaging of Cardiac

Transmembrane Potential." Proceedings of International Conference on Medical Image Computing & Computer Assisted Intervention. (MICCAI 2018) (MLH4@NeurIPS 2018).

P.5 **Prashnna K Gyawali**, Shuhang Chen, Huafeng Liu, B. Milan Horacek, John L. Sapp, Linwei Wang. 2017. "Automatic Coordinate Prediction of the Exit of Ventricular Tachycardia From 12-Lead Electrocardiogram." Proceedings of 44th Computing in Cardiology Conference. (CinC 2017). (oral) (🏅 **Semi-finalist for Young Investigator Award**)

P.4 Erin E. Coppola, **Prashnna K. Gyawali**, Nihar Vanjara, Daniel Giaime, Linwei Wang. 2017. "Atrial Fibrillation Classification from a Short Single Lead ECG Recording Using Hierarchical Classifier." Proceedings of 44th Computing in Cardiology Conference. (CinC 2017).

P.3 Shuhang Chen, **Prashnna K Gyawali**, Huafeng Liu, B. Milan Horacek, John L. Sapp, Linwei Wang. 2017. "Disentangling Inter-Subject Variations: Automatic Localization of Ventricular Tachycardia Origin From 12-Lead Electrocardiogram." Proceedings of 14th International Symposium on Biomedical Imaging. (ISBI 2017).

P.2 Shailesh Acharya, Ashok Kumar Pant, **Prashnna K Gyawali**. 2015. "Deep Learning Based Large-Scale Handwritten Devnagari Character Recognition." Proceedings of 9th International Conference on Software, Knowledge, Information Management and Applications. (SKIMA 2015). (oral)

P.1 Ashok Kumar Pant, **Prashnna K Gyawali**, Shailesh Acharya. 2015. "Automatic Nepali Number Plate Recognition with Support Vector Machines." Proceedings of 9th International Conference on Software, Knowledge, Information Management and Applications. (SKIMA 2015). (oral)

INDEPENDENT PROJECTS

2014-2015 **Beautiful Minds** (Apk Link)
An android Application for Autistic children in coordination with UNICEF Nepal and Autism Care Nepal Society with guidance from Microsoft Innovation Center, Nepal. Funding of $7000 received from UNICEF Nepal was used for the development and design of the tablet-based android app for the children in spectrum.

2015 **Devnagari Handwritten Character Dataset (DHCD)** (Dataset Link)
Large-scale handwritten character dataset of Devnagari (Nepali) language. The dataset was prepared and collected in coordination with the school children and the final dataset is one of the largest datasets of handwritten characters with a total size of around 100K and is open sourced.

TALKS AND POSTERS

2019 Improving Disentangled Representation Learning with the Beta Bernoulli Process
[**Talk**] IEEE ICDM 2019.
[**Talk**] Graduate Research Showcase, Rochester Institute of Technology.

2019 Semi-Supervised Learning by Disentangling and Self-Ensembling over Stochastic Latent Space

[**Poster**] MICCAI 2019.

2018 Deep Generative Model with Beta Bernoulli Process for Modeling and Learning Confounding Factors
[Poster] All of Bayesian Nonparametrics Workshop at NeurIPS 2018 (BNP@NeurIPS)
[Poster] Self-Organizing Conference on Machine Learning (SOCML), Google, Toronto.
[Poster] Graduate Research Showcase, Rochester Institute of Technology.
[Poster] AI@GCCIS symposium, Rochester Institute of Technology.

2018 Variational Autoencoder
[Talk] Teaching apprentice lecture at Ph.D. Seminar Deep Learning 16239.

2018 Biosignals & Intelligent System
[Talk] REU for Computational Sensing - Student orientation 2018.

2018 Learning disentangled representation from 12-lead electrogram: application in localizing the origin of Ventricular Tachycardia.
[Talk] Health Intelligence Workshop, AAAI 18.

2018-17 Disentangling Inter-Subject Variations: Automatic Localization of Ventricular Tachycardia Origin From 12-Lead Electrocardiogram.
[Poster] MedTech '18, University of Rochester.
[Poster] Graduate Symposium, Rochester Institute of Technology.
[Poster] Move78 Retreat '17, Rochester Institute of Technology.
[Poster] RIT RISE student recruitment symposium, Rochester Institute of Technology.

2017 Automatic Coordinate Prediction of the Exit of Ventricular Tachycardia From 12-Lead Electrocardiogram.
[Talk] The 44th Computing in Cardiology Conference, CinC 2017.

2017 Atrial Fibrillation Classification from a Short Single Lead ECG Recording Using Hierarchical Classifier.
[Poster] The 44th Computing in Cardiology Conference, CinC 2017.

TECHNICAL SKILLS

Deep Learning Libraries	PyTorch, Torch, Caffe
Programming Languages	Python, MATLAB, Lua, Java, C/C++
Databases & Query Languages	SQL
Web development	HTML/5, CSS, JavaScript, Django
Other	Amazon AWS EC2, GitHub, SVN

RESEARCH & ACADEMIC AWARDS

ICDM Student Travel Award. (2019). Travel grant jointly sponsored by NSF, IEEE TCI, and ICDM 2019.

Research and Creativity Reimbursement Program. (2019). Grant provided by Office of Graduate Education, RIT to present high quality research work.

GCCIS Travel Grant. (2017). Travel fund of 750$ provided by B. Thomas Golisano College of Computing and Information Sciences to present high quality of research work.

Semi-finalist for The Rosanna Degani Young Investigator Award. (2017). For "Automatic Coordinate Prediction of the Exit of Ventricular Tachycardia From 12-Lead Electrocardiogram" at 44th Computing in Cardiology Conference. (CinC 2017)

RIT Ph.D. Merit Scholarship. (2016-Today). Financial assistance for Ph.D. studies at Rochester Institute of Technology since August 2016.

Transdisciplinary Innovation Program Scholarship. (2015). Full tuition and living expenses covered by Hebrew University for participation in Transdisciplinary Innovation Program 2015.

Finalist of Child App Competition. (2014). The finalist of the Child App Competition organized by Microsoft Innovation Center, Nepal and UNICEF Nepal for the development of mobile application for the Autistic children.

The College Fellowship Scholarship. (2013). For Academic merit and performance during undergraduate studies. Awarded by the Institute of Engineering, Pulchowk Campus.

Asian Science Camp Scholarship. (2012). Travel and living expense scholarship for the participation of Asian Science Camp 2012 in Jerusalem, Israel. Awarded by the Embassy of Israel in Nepal.

ACTIVITIES/LEADERSHIP

Teaching Assistant (TA). (2019). TA position for NVIDIA Deep Learning Institute at RIT "Fundamentals Deep Learning for Computer Vision."

REU Mentor. (2018). Mentor for Research Experience for Undergraduates (NSF-REU) program at RIT for the project "Multi-modal sensing and quantification of atypical attention in autism spectrum disorder."

REU Mentor. (2017). Mentor for Research Experience for Undergraduates (NSF-REU) program at RIT for the project "Attention and behavior of students in online vs. face-to-face learning contexts."

Team Lead, Rescue and Rehabilitation volunteer. (2015). Held a volunteer position during immediate aftermath of Nepal Earthquake 2015 with local NGO AYON Nepal. The responsibilities include first-aid, rescue and information gathering and distribution to central government from the rural parts of the affected regions.

Editor. (2012). Editor of the first issue of "Graphene" magazine, a tech magazine focusing on the latest hardware technology.

PROFESSIONAL SERVICE

Reviewer:

a. International Journal of Image and Graphics

b. International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)