Kishan K C

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RESEARCH INTERESTS

Data Science; Machine Learning (Deep Learning; Graph Representation Learning); Network Biology; Computational Biology.

EDUCATION

Rochester Institute of Technology — Rochester, NY
Ph.D. in Computing and Information Sciences — Aug 2016 – Present
Advisors: Dr. Rui Li and Dr. Anne Haake — *GPA: 4/4*
Relevant courses: Statistical Machine Learning, Deep Learning, Big Data, Quantitative Foundations, Statistical Analysis, Software Engineering

Institute of Engineering, Tribhuvan University — Kathmandu, Nepal
B.E. in Computer Engineering — Jan 2010 – Oct 2014
Thesis: Agricultural Data Integration and Analysis – Analyzing heterogeneous factors that influence agriculture. — *GPA: 4/4*
Relevant courses: Computer Programming, Applied Mathematics, Data Structure and Algorithm, Numerical methods, Probability and Statistics, Artificial Intelligence, Data Mining, Big Data Technologies

PROFESSIONAL EXPERIENCE

Graduate Research Assistant — Aug 2016 – Present
Lab of Use-Inspired Computational Intelligence, RIT, Rochester, NY.
Supervisor: Rui Li, Anne Haake
Research focus: Improving biomedical network inference using graph representation learning and neural architecture inference

Data Engineer — May 2015 - Jun 2016
R&D, Verisk Information Technologies, Kathmandu, Nepal.
Project: Medical Intelligence

Software Trainee — Oct 2014 – Apr 2015
Data Warehouse ETL Team, Yomari Inc. Pvt. Ltd, Lalitpur, Nepal.
Project: Express Enterprise Data Warehouse (EDW)

SKILLS

Data Science tools	IPython, NumPy, Pandas, SciPy, Matplotlib, Seaborn, NetworkX
Deep Learning	PyTorch, TensorFlow, Keras, PyTorch Geometric
Machine Learning	Scikit-learn (Python), Caret (R)
Programming Languages	Python, Java, R
Databases	SQL, PL/SQL

PUBLICATIONS

[4] Kishan K C, Feng Cui, Anne Haake, Rui Li, "**Interpretable Structured Learning with Sparse Gated Sequence Encoder for Protein-Protein Interaction Prediction**", 25th International Conference on Pattern Recognition, (ICPR 2020).

[3] Peng-Nien Yin**,** Kishan K C, Weishi Shi, Qi Yu, Rui Li, Anne R Haake, Hiroshi Miyamoto, Feng Cui, "**Histopathological distinction of non-invasive and invasive bladder cancers using machine learning approaches**", BMC Medical Informatics and Decision Making, 2020.

[2] Kishan K C, Rui Li, Feng Cui, Qi Yu, Anne Haake, "**GNE: A deep learning framework for gene network inference by aggregating biological information**", The Asia Pacific Bioinformatics Conference (APBC 2019).

[1] Kishan K C**,** Rui Li, Feng Cui, Anne Haake, "**Learning topology-preserving embedding for gene interaction networks**", 17th European Conference on Computational Biology, (ECCB 2018), (Poster).

TALKS AND POSTERS

2020 (*Flash talk, Poster*)	**Interpretable sparse encoding of sequences for protein-protein interaction prediction** *European Student Council Symposium*, *2020*.
2019 (*Talk*)	**Learning Sparse and Structure Gaussian Embedding of Protein sequences using pairwise constraints** *RIT Graduate Showcase, RIT, 2019*. (**Best Oral Presentation Award**)
2019 (*Talk*)	**Learning representation from protein sequences** *Guest talk, CISC 865.01 Deep Learning, RIT, 2019*.
2019 (*Talk*)	**PyTorch Tutorials** *Guest talk, CISC 865.01 Deep Learning, RIT, 2019.*
2018 (*Talk*)	**Deep Learning on Graphs.** *Guest talk, Deep Learning Seminar, RIT, 2018.*
2018 (*Talk*)	**Introduction to Neural Networks.** *Guest talk, CISC 863.01 Statistical Machine Learning, RIT, 2018.*
2018 (*Poster*)	**A deep framework for aggregating heterogeneous biological information for gene network inference** *Biological Data Science, Cold Spring Harbor Laboratory, 2018.*
2018 (*Poster*)	**Gene Network Embedding.** *New Deep Learning Techniques, IPAM, UCLA, 2018.*
2017 (*Poster*)	**Reconstruction of Gene Regulatory Networks with Ensemble SVM.** *AI@GCCIS: Golisano College Research & Innovation Showcase, RIT, 2017.*

OPEN SOURCE PROJECTS

BioNetEmbedding — BioNetEmbedding (PyTorch)

General framework to learn representation of biomedical networks.

Gene Network Embedding (GNE) — GNE (TensorFlow)

Designed and developed a deep learning method that integrates network structure with gene expression data to learn interpretable embeddings and demonstrated the state-of-the-art performance in gene interaction inference.

Attentive Multimodal Tied Autoencoder (AMTAE) — AMTAE (PyTorch)

Designed and implemented a new interpretable network fusion method with 73% fewer parameters than the state-of-the-art method (deepNF) and demonstrated comparable performance.

Agricultural Data Integration and Analysis

Integrated multiple factors to understand their effect of crop production and build a recommendation system to suggest appropriate crop cultivation.

SCHOLARSHIPS, AND AWARDS

- **RIT Graduate Showcase Oral Presentation Award. (2019).** Awarded for presentation titled "Learning Sparse and Structure Gaussian Embedding of Protein sequences using pairwise constraints".
- **RIT Ph.D. Merit Scholarship. (2016 – Present).** Financial support for Ph.D. studies at the Rochester Institute of Technology since August 2016.
- **Team of the Quarter (2017).** Awarded in recognition of exceptional performance for developing norm framework – processing and integration. Awarded by the Verisk Information Technologies.
- **The Verisk Way to Go Award (2016).** Received this award as the Data Engineer on the Medical Intelligence project for outstanding contribution. Awarded by the Verisk Information Technologies.
- **Rookie of the Year (2016).** Awarded in recognition of exceptional performance among 70 new employees. Awarded by the Verisk Information Technologies.
- **The College Fellowship. (2011 – 2015).** For academic merit and performance in each semester during the undergraduate studies. Awarded by the Institute of Engineering, Central Campus Pulchowk.
- **Academic Excellence Scholarship. (2011-2015).** For excellent academic performance in the exams of six semesters (II, III, V, VI, VII, VIII) of Bachelor's in Engineering part of Computer Engineering. Awarded by the Institute of Engineering, Central Campus Pulchowk.

PROFESSIONAL SERVICE

- **Reviewer** 2020
  - PLOS ONE
- **Volunteer**
  - International Conference on Learning Representations (ICLR) 2020
  - International Conference on Machine Learning (ICML) 2020