UNLV | HOWARD R. HUGHES COLLEGE OF ENGINEERING

Proposed Research Plan for Sayyed Ahmad Naghavi Nozad

Dr. Mingon Kang is an assistant professor in the department of computer science at the University of Nevada, Las Vegas. His research interests include Machine Learning, Deep Learning, Data Mining, and Big Data Analytics in biomedical fields. Specifically, Dr. Kang is currently focusing on developing novel computational methodologies for interpretable deep learning and integration of heterogeneous data (e.g., multi-omics and medical images) in bioinformatics. He has published more than 60 research papers in prestigious journals and conferences, including Bioinformatics, BMC Bioinformatics, Nature Methods, IEEE/ACM Transactions on Computational Biology and Bioinformatics, and Pacific Symposium on Biocomputing (PSB). Dr. Kang's team is collaborating with Memorial Sloan Kettering Cancer Center, Cincinnati Children's Hospital, and Harvard Medical School.

Mr. Sayyed Ahmad Naghavi Nozad is offered a position for Research Assistant in DataX Lab (http://www.dataxlab.org) in the Department of Computer Science at The University of Nevada, Las Vegas. Mr. nozad will conduct cutting-edge research in Bioinformatics using Machine Learning, Deep Learning, and Big Data Analytics. Specific research topics are follows:

Interpretable Deep Learning:

He will be guided by Dr. Mingon Kang to develop new deep learning architectures and optimization techniques for obtaining new domain knowledge from deep learning models. To make deep learning model interpretable, there are several challenges to tackle: (1) building robust optimization techniques for neural networks, (2) developing sparse solutions on neural networks, and (3) embedding prior domain knowledge to neural networks. The new solutions will be used to build robust interpretable neural network models to understand complex biological systems and to predict clinical outcomes.

Protein sequence data analysis to predict protein's structure and functions:

Prediction of protein structures and functions is critical to understand biological mechanism. Mr. Nozad will develop a new deep learning model that estimates protein's structures and functions given protein sequences (i.e., amino acid sequences). He will create a protein sequence database that includes more than millions of protein information, and then build an interpretable model that identifies motif.

Mr. Nozad will conduct the research under the guidance of Dr. Kang in collaboration with multiple biologists and domain exports. He will have weekly meetings with Dr. Kang and group meetings with lab members. He will be encouraged to publish prestigious journals and conferences as outcomes of the projects.

If you have any further questions, please do not hesitate to contact me.

Sincerely,

Mingon Kang, Ph.D.
Assistant Professor
Department of Computer Science
University of Nevada, Las Vegas