

**When:** Friday 15:00 – 15:30, October 4, 2019

**Where:** ETB 1035

**Speaker:** **Hyun-Myung Woo**

Ph.D. Student in Prof. Byung-Jun Yoon's Group  
Department of Electrical and Computer Engineering  
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**Title:** **Accurate Biological Network Alignment through  
an Iterative Optimal Mapping between Neighborhood Sets of Focal Nodes**

**Abstract:** Protein-protein interaction (PPI) network alignment finds conserved regions across different species thereby allowing one to transfer biological knowledge of the regions in well-studied PPI networks to the aligned regions in relatively less studied PPI networks. Although several alignment algorithms have been proposed, no one has consistently outperformed other existing algorithms in terms of biological and topological qualities with competitive time complexity. In this work, we present an accurate biological network alignment algorithm based on a novel scoring framework quantifying degree of topological similarity between two proteins (represented as nodes in PPI networks). Our extensive simulation results clearly show that the proposed algorithm clearly outperforms other existing state-of-the-art algorithms in terms of biological and topological qualities with competitive time complexity.

**Bio:** Hyun-Myung Woo is a Ph.D. candidate student in Electrical and Computer Engineering at Texas A&M University. He received Bachelor of Science in Information & Communication Engineering and Master's of Computer Science from Yonsei University in South Korea. He was an embedded system software engineer in IDIS and a senior engineer standardizing 5G wireless communication in LG electronics. He is currently interested in computational approaches addressing diverse biological problems, such as study of protein-protein interaction networks and single cell RNA sequencing profiles.