Biomedical Knowledge Discovery System

Time-saving technique which allows biomedical researchers to quickly discover implicit connections between important concepts.

Market Overview:
Hypothesis generation is becoming a crucial technique that allows researchers to make connects between concepts. Typically, the systems operate on domain-specific fractions of public medical data. There are many unknown connections in the biomedical sciences. In order to fill the gaps in existing biomedical knowledge, Clemson University researchers have developed MOLIERE, which utilizes information from over 24.5 million historic documents including scientific papers, keywords, genes, proteins, diseases and diagnoses. MOLIERE will propose a possible connection between biomedical objects that are not known to be related to one another.

Application
Biomedical Discovery, Data Analysis

Advantages
- Has a different algorithmic procedure from existing technology.
- Has massive validation results.
- Potentially can be used in the drug discovery pipeline.

Technical Summary
This technology has a multi-modal and multi-relational network of biomedical objects extracted from several heterogeneous datasets from the National Center for Biotechnology Information. MOLIERE models hypotheses using Latent Dirichlet Allocation applied on abstracts found near shortest paths discovered within the network. Effectiveness is demonstrated by performing hypothesis generation on historical data.

Stage of Development
Proof of Concept

App Type	Country	Serial No.	Patent No.	CURF Ref. Number	Inventors
N/A	United States	N/A	N/A	2020-028	Ilya Safro

Inventor

Dr. Ilya Safro is an assistant professor in the College of Engineering, Computing and Applied Sciences. Dr. Safro received his Ph.D. in applied mathematics and computer science at Weizmann Institute of Science. Prior to coming to Clemson, he has worked as a mathematician and computational scientist in the drug design industry. His research interests include applying mathematical methods for predictive modeling of complex systems.