S03-1 (02/15 13:10-13:35)

The Convergence of Artificial Intelligence and Biobank in Precision Medicine

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Abstract

Big data analytics based on large-scale biobank data provides a promising avenue for disease risk prediction in precision medicine. Genomic data and other non-genetic information are crucial. In this study, artificial intelligence and data sciences approaches were integrated to analyze the data from the Taiwan Biobank and several international projects. The analysis procedures were developed, and the models with high classification and prediction accuracy (area under the receiver operating curve is greater than 0.9) were established. An example of Type II Diabetes with a multifactorial and polygenic mode of inheritance is provided. This is a joint work with Yi-Jia Huang.

Keywords:
Biobank; Precision Medicine; Single Nucleotide Polymorphism; Medical Imaging; Type II Diabetes; eXtreme Gradient Boosting.