Computational Biology and Biomedical Informatics Expertise to Support Life and Health Sciences Research and Industry

Chi-Ren Shyu

Interdisciplinary collaboration between computational sciences and life/health sciences is a hallmark of the MU Informatics Institute (MUII) and its new Informatics Ph.D. program. The Institute was established to foster synergy and interdisciplinary research applications in animal, plant, human health, geospatial and microbial sciences. Creative faculty and modern computation-based research facilities combine to enable groundbreaking collaborative research that relies heavily on informatics tools and expertise. In this talk, I will briefly introduce the informatics expertise of MUII core faculty in supporting experimental scientist's R&D activities with commercialization potentials by using an example scenario in personalized medicine. There are six signature research areas that are underpinning components: (1) high-throughput sequence assembly and analysis, (2) structural bioinformatics – prediction, retrievals, and interactions, (3) large-scale and high-throughput phenotype analysis, (4) data mining and knowledge discovery from large-scale omics databases and electronic health records (5) visualization and parallelism of informatics data, and (6) geospatial informatics.