LIANGTI DAI

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Centre for Computational Biology, MRC Weatherall Institute of Molecular Medicine, University of Oxford

RESEARCH SPECIALIZATION

Computational and Statistical Genomics; Bioinformatics; Machine Learning

EDUCATION

University of Oxford, England, U.K. Oct.2018-
DPhil student, Interdisciplinary Bioscience Doctoral Training Partnership

Nankai University, Tianjin, China Aug.2014-Jun.2018
B.S., Biological Sciences

RESEARCH

Statistical modelling and machine learning for next-generation sequencing data Jul.2019-
DPhil research · Supervisor: Gerton Lunter
· Developed a novel model-based algorithm with Hidden Markov Model implementation for high-resolution peak calling from ATAC-seq peak alignment data (paper in preparation).
· Applied topic modelling on single-cell omics data for dimensionality reduction and regulatory genomic element identification.
· Predicted tissue-specific chromatin accessibility from DNA sequences by integrating gene expression information with deep convolutional neural networks.

Pipeline construction for single-cell ATAC-seq data analysis and visualization Mar.2020-
· Constructed an end-to-end pipeline for high resolution processing of single-cell ATAC-seq data processing with a flask application for interactive visualization.

Exploring transmission dynamics modelling of COVID-19 Mar.- Dec.2021
· Developed an R package (ComoModels) of compartmental epidemiological models for understanding complex aspects of COVID-19 transmission. (Collaboration)
· Built a user-friendly shiny web application accompanying ComoModels for fully interactive model demonstration and parameter exploration.

INTERNSHIP

School of Medicine, Yale University Jul.-Sept.2017
Student intern · Supervisor: In-Hyun Park
· ATAC-seq and CHIP-seq in wild-type and mutant human embryonic stem cells

OTHER ACADEMIC ACTIVITIES

Lecture Caption Editor 2021
· Mathematical Biology; Medical Statistics
Teaching Assistant and Demonstrator Nov.-Dec.2019
· Modelling and Scientific Computing; Essential Mathematics

SKILLS

Python, R, Pytorch, Tensorflow, Next-generation sequencing analysis tools

AWARDS

· Gold medal, International Genetic Engineering Machine Competition (iGEM) 2016
· Outstanding Academic Award, Nankai University 2015 - 2018