Chenxi Nie

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Email: chenxi_nie@outlook.com **Website**: chenxinie.github.io **Citizenship**: China

Research interests

Cancer progression models, Random Processes, Phylogenetics

Education

Swiss Federal Institute of Technology Zurich Basel, Switzerland
Master's in Computational Biology September 2020 – September 2022
Mentor: Prof. Dr. Niko **Beerenwinkel** *GPA: 5.65/6.00*

Harbin Institute of Technology Harbin, China
BA in Bioinformatics September 2016 – June 2020
Mentor: Prof. Dr. **Liu** Bo *GPA: 92.72/100.00*

Research experience

Modelling metastatic progression using MetMHN

Mentor: Prof. Dr. Niko Beerenwinkel (ETHz) 03.2022 - 07.2022
Designed and implemented MetMHN, a cancer progression model that models both primary tumors and metastases' genetic progression. Conducted model validation using simulations and real-world datasets.

Scaling up MetMHN: a sampling based approach
Mentor: Prof. Dr. Niko Beerenwinkel (ETHz) 03.2023 - 09.2023
Developed a Markov Chain Monte Carlo Sampler for MetMHN, resulting in a 50x speedup. Efficient implementation of Sampling-MetMHN using C++. Model validation using simulations and real-world dataset on a larger scale.

SCoRe validation - elevated reassortment rate before host jump events in segmented virus
Mentor: Prof. Dr. Tanja Stadler (ETHz) 09. 2022 - 11.2022
Understanding SCoRe and BEAST software packages. Proposed and developed a simulation algorithm to verify whether SCoRe is able to detect increased reassortment rate before host jump events. Searched for biological literature about virial reassortment rates and host jump events.

Structural variation detection algorithm based on population scale sequencing
Mentor: Prof. Dr. Liu Bo (HIT) 11.2019 - 06.2020

Designed and implemented a structural variation calling algorithm that utilizes existing structural variations documented in population databases. Performance evaluation using precision and recall.

Skills

Programming
Proficient in: Python, R.
Familiar with: C++ Eigen library, Matlab, Java.

Statistical Modelling
Random processes, Simulation and Sampling algorithms

Software Engineering
Performance assessment using profilers, Test oriented programming.

Languages
Chinese (native), English (fluent)

Other interests

landscape and astro photography