

DEPT OF EECS
COLLEGE OF ENGINEERING AND APPLIED SCIENCE

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

APPLICATION DEADLINE: 02/25/2022

PROJECT TITLE: Add map/reduce capability to LHF

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Project Description

LHF is a lightweight homology framework developed in my research laboratory for experiments in the application of Topological Data Analysis (TDA). The project is supported by NSF and we are currently working to implement a technique called Partitioned Persistent Homology (PPH). PPH decomposes the input data into regions of interest that can be analyzed separately and concurrently. The LHF system is written in C++ (with python bindings) and has been augmented with MPI/OpenMP code to support parallel and distributed execution. This project will be to replace (or augment) the MPI/OpenMP implementation with a map-reduce alternative. Interested candidates will work with my research team of graduate students and be required to participate (virtually or in person) with weekly research review meetings of the group.