**Project:** Non-Blocking Data Structures for Scalable Data Analytics  
**Advisor:** Keval Vora (keval@sfu.ca)

**Project Description:**
As large amounts of data get continuously generated, data analytics systems employ efficient task management strategies for real-time processing. The task management strategies are often backed by efficient non-blocking data structures that guarantee linearizability while providing high operation throughput.

This USRA project aims to study the performance limitations of existing non-blocking data structures and develop novel data structure specifications as well as non-blocking implementations for scalable analytics. The data structure specifications will be designed based on the requirements from task management, and the correctness (linearizability) guarantees expected from the data structure operations. After that, non-blocking implementations will be developed to satisfy the performance guarantees and enable scalable execution.

**Desired skills/qualifications:**
- Comfortable with C++ and parallel programming
- Basic knowledge about programming on Linux environment
- Interest in learning about data analytics systems
- Interest in analyzing open-source implementations