CSSI Element: GraphPack: Unified Graph Processing with Parallel Boost Graph Library, GraphBLAS and High-Level Generic Algorithm

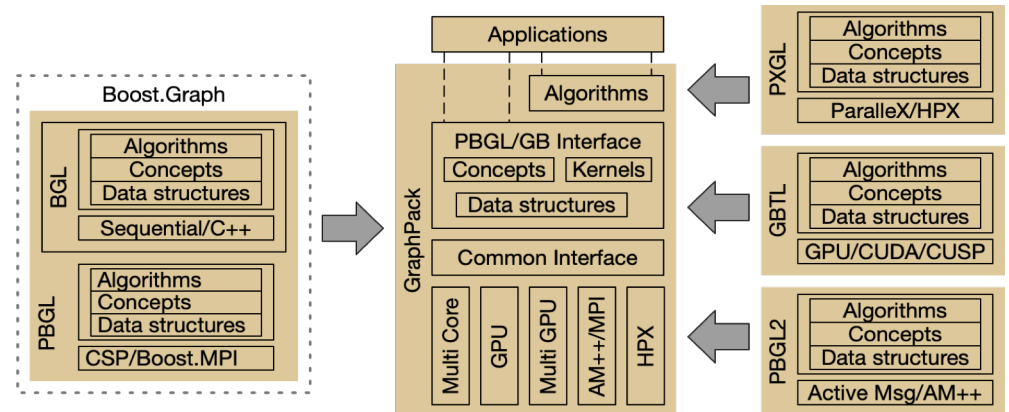Andrew Lumsdaine, University of Washington

"There are no graphs"

Generic algorithms **specify requirements** on their input types

Generic libraries contain **useful algorithms** organized around **classifications** of these requirements ("**concepts**")

Range of ranges

`std::vector<std::forward_list<int>>`

Parallelization based on C++ standard


```cpp
template <typename ExecutionPolicy typename Iterator>
size_t triangle_count(ExecutionPolicy&& policy, Iterator first, Iterator last) {
  atomic<size_t> triangles = 0;
  counting_output_iterator counter(triangles);

  std::for_each(policy, first, last, [&](auto&& x) {
    for (auto v = x.begin(); v != x.end(); ++v) {
      std::set_intersection(v, x.end(), G[*v].begin(), G[*v].end(), counter);
    }
  });

  return triangles;
}
```