
Joel C. Adams          Richard Brown          Elizabeth Shoop
Calvin College        St. Olaf College       Macalester College
adams@calvin.edu      rab@stolaf.edu       shoop@macalester.edu

Abstract
Parallel and distributed computing (PDC) is now in the core CS curriculum, and every CS student needs to learn about PDC. **CSinParallel** is an NSF funded project to provide modular pedagogical materials, tools, and faculty development workshops for PDC. One of our tools is *patternlets*, a collection of self-paced, minimalist, text-based, scalable parallel programming exercises. Another of our tools is *TSGL*, a thread-safe graphics library that can be used with OpenMP, C++11, and/or POSIX threads. Using TSGL, an educator (or student) can annotate a multithreaded computation with graphics calls that show precisely what each thread is contributing to the computation as the program is running, in near real-time. This presentation includes an overview of the CSinParallel project, plus "live" demonstrations of patternlets and TSGL visualizations that illustrate different ways of visualizing parallel behavior.

Resources:
- **CSinParallel**: http://csinparallel.org
- **Patternlets**:
  - Collection: https://github.com/joeladams/patternlets
  - Module: http://serc.carleton.edu/csinparallel/modules/patternlets.html
- **TSGL**:
  - Collection: https://github.com/Calvin-CS/TSGL
  - Module: Coming this summer!