UIUC ECE 598HK (now ECE508)  
Background

• Started as a full-semester experimental graduate course on algorithm scalability techniques for manycores in 2010
• Offered as a one-week VSCSE Summer School
  • in 2011 and 2012, video linked to 10 sites
• Also as a one-seek EU PUMPS Summer School
  • Offered in 2012, 2013, 2014, 2015 in Barcelona
• Offered as multi-university Virtual School course ECE 598HK in 2012 and 2014
Seven Techniques in Many-core Programming

• Scatter to gather transformation
• Granularity coarsening and register tiling
• Data access tiling
• Data layout and traversal ordering
• Binning (spatial sorting) and cutoff
• Bin sorting and partitioning for non-uniform data
• Hierarchical queues and kernels for dynamic data
Model of Operation

- The lead university provides
  - Video lectures
  - Programming labs
  - Exams
  - Lead TAs
  - Wiki page
  - Grade report to local faculty
- Each participating university locally offers a experimental course
  - Classroom discussions
  - Local responsible faculty
  - Final grading policy/decisions

Fall 2014 Offering
- U. of Illinois/NCSA - Lead
  - Prof. Wen-mei Hwu
- U. of Tennessee, Knoxville
  - Prof. Greg. Peterson
- U. of Oklahoma
  - Prof. Ron Barnes
- NC State U.
  - Prof. Huiyang Zhou
Some Important Parts

- Bi-Weekly conference calls with all instructors
  - Overview of the next two weeks, tips, known issues, resources
  - Status on the ground, feedback, requests,
- Course Wiki that gives each participating university
  - Customized calendars and deadlines
- Final project proposal workshops and presentations attended by lead professor and TAs
Some Thoughts

• Pooling specialized graduate courses will become a necessity for public institutions
  • More frequent offering, fewer students required per institution, access to less common faculty expertise
• Key to sustainability is building a community
  • More than one potential lead university
  • Contribution to lectures, labs, exams, and course staffing by participating universities
  • Some type of credit system may be needed for sustainability
Contact Steve Gordon or Scott Lathrop if you interested in becoming a participant or lead for a new course!