# OpenSHMEM:
Overview of Exercises

MSc in HPC

David Henty, Alan Simpson, Dominic Sloan-Murphy (EPCC)
Harvey Richardson, Bill Long (Cray)

Exercise 1

- Hello world example
  - check you can log on, compile, submit and run

- Writing arrays as pictures
  - declare symmetric arrays and use basic OpenSHMEM
  - write out arrays in PGM picture format
  - view them using `display` from ImageMagick
 - use both remote reads and remote writes

Sample output on 4 PEs
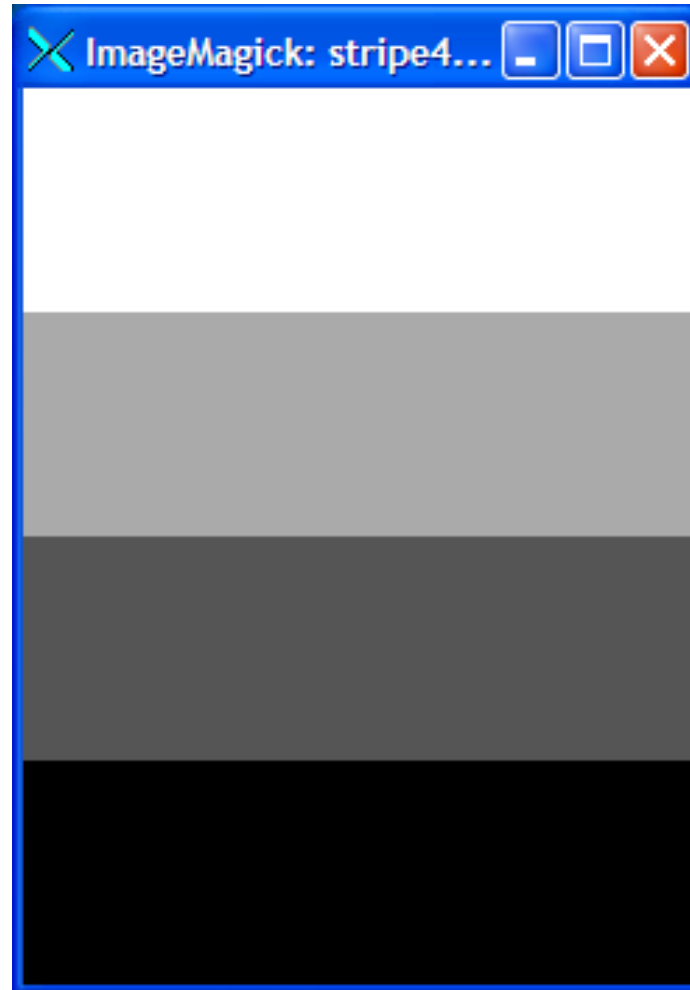
Exercise 2

- Perform simple edge detection of features in a picture
  - halo communication between 1D grid of images

- Reconstruct picture from supplied edges
  - an iterative algorithm
  - computationally intensive so worth parallelising

- Terminate based on some stopping criterion
  - requires global sums

- Use global or point-to-point synchronisation
- Look at scalability

Edge detection and picture reconstruction

single pass

hundreds of iterations
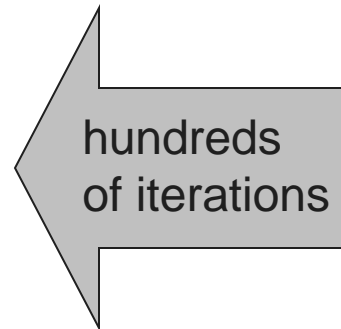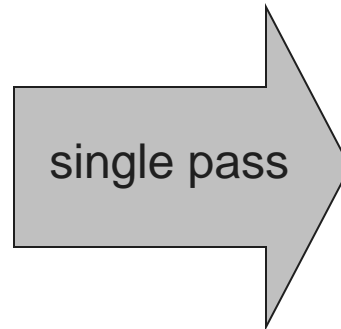
Documentation

- Full instructions in exercise notes
  - PDF copy in doc/ subdirectory

- **Go at your own pace**
  - no direct dependencies between practicals & lectures
  - each exercise follows on from the last

- If you're not sure what to do or if you have any other questions then please ask us!