

## Azure Cloud/GPU Based Radiation Dose Computation

- Implement a GPU based dose computation algorithm in the Azure cloud on multiple GPU with a simple web page user interface.
- **What Students Will Do:** Establish a container that can be executed on the Azure cloud that computes dose on a CT scan from a set of treatment beam definitions. This will require reformatting existing CUDA and D dose computation code to run in the container and take advantage of the cloud based GPU resources.
- **Deliverables:**
  - Code to run dose computation in container on Azure platform
  - Simple website to upload the CT and treatment beam information (DICOM or JSON)
  - A remedial display on the web page to view the dose on the CT
  - A capability to modify a beam parameter and see dose change on the display – goal would be interactive dose updates.
- **Size group:** 2-3 (1 possible, with downscaling)
- **Skills:** Azure development, CUDA, C/python/D
- **Mentors:** Todd McNutt, Pranav Lakshminarayanan, Julie Shade

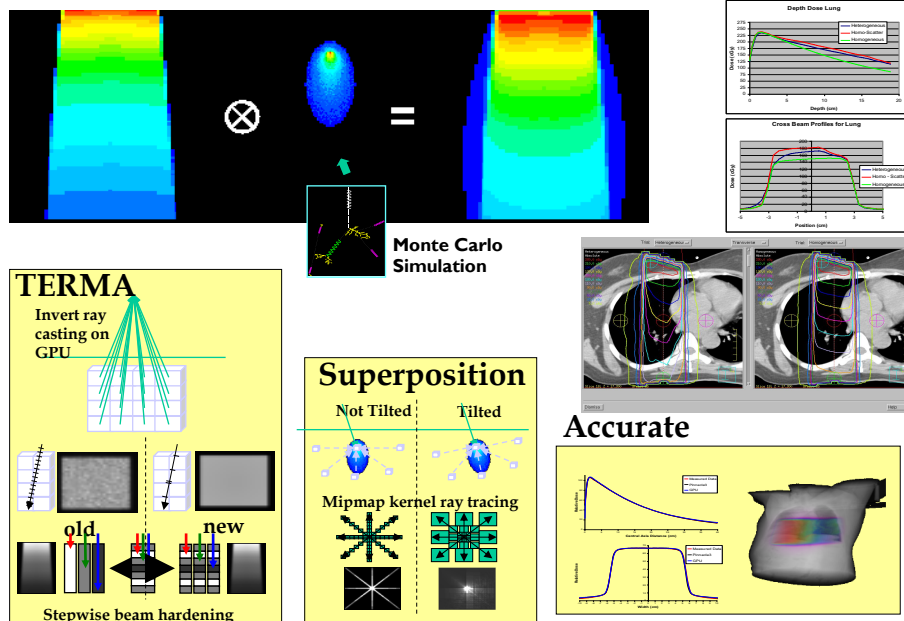
1 600.456/656 CIS2 Spring 2021

Engineering Research Center for Computer Integrated Surgical Systems and Technology



1

## Fast Convolution/Superposition Dose Computation on GPU



2 600.456/656 CIS2 Spring 2021

Engineering Research Center for Computer Integrated Surgical Systems and Technology



2

