Multimodal Imaging, Modeling and Presentation
CSC 59866, Spring 2007

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Course Organization

- Spring 2007: Capstone I
  - Lectures, labs and readings
  - Project topics and specifications
- Fall 2007: Capstone II
  - Project design
  - Project implementation
  - Project evaluation
Course Contents

- Imaging
- Modeling
- Presentations with
- Multiple Modalities
  - Color (video)
  - Thermal (video)
  - Acoustic (audio)
  - 3D structure
  - ...
- Image Input; Sensors
- Processing; Computing
- Image Output; Display
- Multiple Sensors
  - Color cameras
  - Thermal cameras
  - Laser Doppler vibrator
  - Stereo head
  - ...

Capstone I Outline

- Fundamentals of Image Processing
  - Image Formation & Multimodal Sensing
  - Image Enhancement & Processing
  - Morphological and Color Image Processing
  - Image Segmentation and Object Extraction
- Selected Topics and Labs
  - Image processing GUI with QT
  - Multimodal sensors & digital interfaces
  - Image processing in Matlab with C++
  - Camera /Image access with web interface
Capstone II Project Ideas

- Multimodal sensing for human exercise (e.g., on treadmill) analysis and integrated displays with QT
- Web interface for video surveillance with a webcam
- Matlab interface for image mosaicing with a PTZ camera control and USB capture via C++
- Image colorization, enhancement and display using Matlab & C++

Textbook and References

- **Textbook** (not required)
- **References**
  - [Image processing - Wikipedia](http://en.wikipedia.org/wiki/Image_processing)
  - [MATLAB image processing - Wikipedia](http://en.wikipedia.org/wiki/MATLAB_image_processing)
  - Matlab image processing toolbox