CMSC 317: The Computational Image
Semester Project

Overview

The semester project is an opportunity for you to explore the computational image through a project of your choice. We have discussed various methods and algorithms for *computing with images*, this is your chance to employ them in a cohesive interesting way. Ideally your project would have components that both analyze and synthesize images, but it is acceptable for projects to be more vision or more graphics focused.

You are free to choose whatever language and technology that make the most sense for your project. There are few requirements:

- The project should be substantial (it is worth 35% of your entire grade).

- Each team should be composed of 2–4 people.

- Group work should be well-decomposed – each member should take ownership of some aspect.

- Written reports should address the following aspects of your system:
  - Design
  - Implementation
  - Evaluation

Deadlines and Deliverables

October 24	Project Idea and Team	What?	problem, proposed solution
		Why?	motivate problem
		Who?	team members
November 2	Development Plan	What?	problem, proposed solution and method of evaluation
		Who?	team member responsibilities
		When?	a development and testing timeline
November 23	Status Report	What?	accomplishments; remaining work
		How?	design and initial implementation
December 12	Final Project Report and Demonstration	What?	problem and proposed solution
		Why?	motivate problem and solution
		Who?	team member contributions
		How?	design, implementation, evaluation

Learning Objectives

- Design, implement and evaluate an interactive software system.

- Work as a group to build a substantial piece of software.

Hardware Available

- Microsoft Kinect RGBD Camera

- NEC multimedia projector

- Microvision ShowWX+ pico projector

- Logitech C910 HD webcam

- Prosilica Ethernet camera

- Parallax Propeller development board

- IPRE Fluke camera board

- Flip MinoHD 4GB Camcorder

Potential Project Topics

- Augmented Reality

- Structured Light Range Scanner

- Interactive Projector-Camera System

- Multi-Touch Surface

- Stereo Vision

- Image Stitching

- Image Warping

- Compositing

- Anamorphosis