EECS 222: Embedded System Modeling Lecture 12

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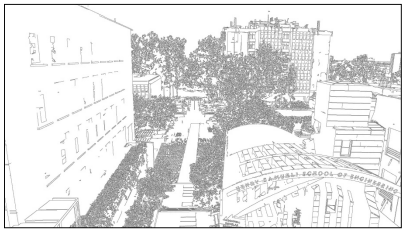
Lecture 12: Overview

- Homework Assignment 5
  - Structural Model of the Canny Edge Detector
    - Discussion
    - Model development on the whiteboard

EECS 222 Project

- Application Example: Canny Edge Detector
  - Embedded system model for image processing: Automatic Edge Detection in a Digital Video Camera

EngPlaza001.bmp



EngPlaza001_edges.pgm

  - Video taken by a drone hovering over UCI Engineering Plaza
    - Available on the server: **`~eecs222/public/video/`**
    - High resolution, 2704 by 1520 pixes
    - Video length 9 seconds, using 20 extracted frames for test bench model

Homework Assignment 5

- Task: Structural Model of the Canny Edge Detector
  - Convert the application to process a stream of video frames
  - Add test bench structure to the SLDL model from Assignment 4
  - Choose either SpecC or SystemC for simulation
- Steps
  1. Create test bench structure: Stimulus, Platform, Monitor
  2. Create platform model: DataIn, DUT, DataOut
  3. Localize functions and add loops for stream processing
- Deliverables
  - **`Canny.sc`** or **`Canny.cpp`** (choose one!)
  - **`Canny.txt`**
- Due
  - By next week: May 15, 2017, 12pm (noon!)

Homework Assignment 5

- Task: Structural Model of the Canny Edge Detector
  - Expected instance tree

```
Main / Top
|------ Monitor monitor
|------ Platform platform
|       |------ DUT canny
|       |------ DataIn din
|       |------ DataOut dout
|       |------ c_img_queue q1
|       \------ c_img_queue q2
|------ Stimulus stimulus
|------ c_img_queue q1
\------ c_img_queue q2
```


Homework Assignment 5

- Task: Structural Model of the Canny Edge Detector
  - Discussion on whiteboard: Chart of model top-level structure