

CPSC 679b HW 4 - Due Sunday Mar 6, 2016, 11:55 pm.

Submit code, models and text via classesv2, leave your prints in the "Results" area in the lab.

1. (30pts) Corner Detection

Write a C or C++ program to find corners by doing the following:

- Read in an image after converting to ppm by whatever means you choose.
- Compute a gray scale for each pixel using : $0.3R+0.5G+0.2B$
- Compute the image derivatives at each point in the image using the mask $\begin{pmatrix} -2, -1, 0, 1, 2 \end{pmatrix}$ in the x and y directions.
- Compute the matrix M at each pixel by doing a simple average of the values I_x^2, I_y^2, I_{xy} in a 15x15 pixel window centered on the pixel.
- Compute the value $R = \det(M) - .04 \text{ trace}(M)^2$, and output a gray-scale coded (i.e. minimum R value is black, maximum is white) result of the resulting values for the two images given with this problem.

Show the results you obtain for the three given sample images.

2. (50pts) Printing and Scanning

- Make a white object from the clay provided that has at least two topological handles.
- Scan the object with the active scanner of your choice.
- Use VSFM to create a model of the object. If necessary, make marks on the surface to help get a model.
- Print one of the digital models you created.

3. (20pts) Technical reading

Read "Computing and Fabricating Multiplanar Models"

Answer these questions:

How does this approach differ from others that attempt to make models from flat pieces of paper, wood or cardboard?

What constraints do the authors when computing the connectors?

In what applications would this approach be better than 3D printing?