

# Assignment A4: Correspondence

*CS 6320*  
*Spring 2014*

**Assigned:** 27 January 2014

**Due:** 5 February 2014

For this problem, handin a pdf with the requested discussion and work (include name, date, assignment and class number in pdf), as well as the Matlab code. The code should conform to the style requested in the class materials.

**A4.1:** Develop a Matlab function for *Pixel-based Correlation*: given a stereo pair, for each pixel in the first image, find the most likely point in the second image that corresponds to it. Validate the code on a stereo pair generated so that you know the correspondences.

The function specification is:

```
function corr = CS6320_pixel_corr(im1,im2)
%
% CS6320_pixel_corr - find pixel correspondences
% On input:
%   im1 (mxn image): stereo image 1
%   im2 (mxn image): stereo image 2
% On output:
%   corr (mxn x 2): vector offset (in pixels) from im1 pixel to im2
%                   corresponding pixel
%                   (channel 1 is row offset, channel 2 is column)
% Call:
```

```

%     sc = CS6320_pixel_corr(im1,im2);
% Author:
%     <Your name>
%     UU
%     Spring 2014
%

```

**A4.2:** Develop a Matlab function for *Feature-based Correlation*: given a stereo pair, for each of a set of certain features (your choice) in the first image, find the most likely point in the second image that corresponds to it. Validate the code on a stereo pair generated so that you know the correspondences. Features can be line segments, corners, etc. Put the feature calculation inside this function.

The function specification is:

```

function corr = CS6320_feature_corr(im1,im2)
%
% CS5320_feature_corr - find pixel correspondences
% On input:
%     im1 (mxn image): stereo image 1
%     im2 (mxn image): stereo image 2
% On output:
%     corr (mxn x 2): vector offset (in pixels) from im1 pixel to im2
%                     corresponding pixel
%                     (channel 1 is row offset, channel 2 is column)
% Call:
%     sc = CS6320_feature_corr(im1,im2);
% Author:
%     <Your name>
%     UU
%     Spring 2014
%

```

**A4.3:** Develop a Matlab function to compute a *Disparity Map*: given a stereo pair, create

the disparity map. Validate the code on a stereo pair generated so that you know the correspondences. Features can be line segments, corners, etc. Put the feature calculation inside this function.

The function specification is:

```
function disparity = CS6320_disparity(im1,im2)
%
% CS6320_disparity - find disparity map for stereo pair
% On input:
%   im1 (mxn image): stereo image 1
%   im2 (mxn image): stereo image 2
% On output:
%   disparity (mxn): disparity map for stereo pair
% Call:
%   d = CS6320_disparity(im1,im2);
% Author:
%   <Your name>
%   UU
%   Spring 2014
%
```