EE569 Digital Image Processing

**HOMEWORK #3**

**HOMEWORK – Introduction to Digital Image Processing**

**Issued: 17/02/2020 Due: 3/03/2020**

# Problem 1: Geometric Image Modification (40%)

1. **Geometric warping (Basic: 20%)**

**Motivation**

**Approach and Procedure**

**Results**

**Discussion**

**Answers**

1. **Homographic Transformation and Image Stitching (Basic: 20%)**

**Motivation**

**Approach and Procedure**

**Results**

**Discussion**

**Answers**

# Problem 2: Morphological processing (60%)

1. **Basic morphological process implementation (Basic: 18%)**

**Motivation**

Morphological processing is based on topology to manipulate the image into a simple abstract structure. The simple abstract graph like point, stroke and ring can be easily detected and judged by certain condition which is quite helpful to find similar texture inside the image. There are three basic operations which are thinning, shrinking and skeletonizing for morphological processing.

**Approach and Procedure**

The implementation is based on given pattern table. The image is processed iteratively until there is no modification between previous processed image and next processed image. When the iteration stops, the image with simple texture inside is got.

**Results**

**Discussion**

**Answers**

1. **Counting games (Basic: 15%)**

**Motivation**

**Approach and Procedure**

**Results**

**Discussion**

**Answers**

1. **PCB analysis (Advanced: 15%)**

**Motivation**

**Approach and Procedure**

**Results**

**Discussion**

**Answers**

1. **Defect detection (Advanced: 12%)**

**Motivation**

**Approach and Procedure**

**Results**

**Discussion**

**Answers**