# Computer Vision

**Introduction**

- The Developmental Pathway of Computational Vision Technology
- Elements of a Digital Image Processing System
- A digital Image
- Image acquisition using a CCD camera
- Image Formation and Image Models
- Basic Relationships Between Pixels
  - • Neighborhood
  - • Adjacency
  - • Connectivity
  - • Paths
  - • Regions and boundaries
- Rotation
- 2D Rotation Matrx Formula
- Homogeneous System
- 2D Traslation
- 2D Traslation using Homogeneous Coordinates
- Scaling
- Scaling Equation
- Scaling and Translation
- Scaling+Rotation+Traslation
- Basics 3D Transformation equations

Projections [Refer Class notes]

- Rigid Body Transformation
- Parllel Lines converge to vanishing point in projection
- Near objects are lower in the image and look bigger in projection

Image Processing

- Histogram equilization[ refer 3.1.4 from  Richard Szeliski ]
- Linear Filtering  [ Refer Vidio 1 and 2 ]
  - Seperable filtering
  - Median Filtering
  - Morpholoogy
  - convoloution
  - box Filter
  - binomial filter
  - gradient Filter
  - sobel
  - laplace filter
- Direct Linear Transformation [Refer video 3 and notes]
- Stereo image [refer video 4]

Video links

1. https://www.youtube.com/watch?v=ZRvq3gHcprI&list=PLgnQpQtFTOGRsi5vzy9PiQpNWHjq-bKN1&index=9
2. https://www.youtube.com/watch?v=sY3f3mbgMDw&index=10&list=PLgnQpQtFTOGRsi5vzy9PiQpNWHjq-bKN1
3. https://www.youtube.com/watch?v=ywternCEqSU&index=26&list=PLgnQpQtFTOGRsi5vzy9PiQpNWHjq-bKN1
4. https://www.youtube.com/watch?v=hab07nMeUzA&t=2599s