Introduction
Computer Vision (CPV301)

Introduction

- **Lecturer**
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Prerequisite

- **Computer Language**:
  - Programming Fundamentals Using Python
- **Math**:
  - Basic probability and statistics: conditional probability, mean, and variance
  - Linear algebra: matrix transpose, inverse
  - Calculus: derivative, and maximize a function

Course objectives

- Understand the Image formation in concepts.
- Getting to know the Image processing.
- Understand the Feature detection and matching.
- Understand the roles Segmentation.
- Understand the Structure from motion.
- Understand the Image stitching.
- Understand the concepts of object detection, recognition, tracking

Contents

- Introduction and its application
- Image formation
- Image processing
- Feature detection and matching
- Segmentation
- Feature-based alignment
- Structure from motion
- Image stitching
- Object detection, recognition, tracking

Resources

- **Tool**
  - Free IDE
  - Python language

- **Text book**
  - *Computer Vision: Algorithms and Applications*, by Richard Szeliski, Springer, 2nd Ed., 2022. http://szeliski.org/Book/
  - *Digital Image Processing*, by Rafael Gonzalez and Richards Woods, Pearson, 4th Ed., 2017.
    https://dl.icdst.org/pdfs/files4/01c56e081202b62bd7d3b4f8545775fb.pdf
  - Learning OpenCV 4 Computer Vision with Python 3, by Joseph Howse and Joe Minichino, 3rd Ed., 2020.
    https://github.com/PacktPublishing/Learning-OpenCV-4-Computer-Vision-with-Python-Third-Edition

Course Plan

- See course plan and slides on FPTU Learning Materials
  - https://flm.fpt.edu.vn/gui/Home

- See other plans on LMS
  - Mostly for doing progress tests

Course Requirements

- Following lessons in classroom

- Reading textbook and documents at home

- Completing chapter assessment in time

- Discussing actively in your teams and in classroom

Assessment Scheme

- 08 Labs (10%)
- 01 Assignment (20%)
- 02 Progress test (10%)
- 01 Practical Exam (30%)
- Final Exam (30%)

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Enjoy the course

Be enthusiastic about the material because it is interesting, useful and an important part of your training as a software engineer. Our job is to help you learn and enjoy the experience.

We will do our best but we need your help.

Q&A