

Module Name: (B.3) Computer Vision

Aim

This module aims to introduce the main principles of modern computer vision systems equipped with pattern recognition capabilities, with emphasis to the analysis and implementation of certain algorithms from the literature.

Learning Objectives

The main learning objectives include the ability to analyze, design and implement a modern computer vision system, able to understand and interact with its environment (a scene).

Learning Outcomes

On successful completion of this module, students should be able to:

- Analyze scientific research papers and describe computer vision algorithms.
- Acquire data from a camera source.
- Understand and apply Deep Learning models in computer vision.
- Process the acquired image/video data in order to improve their quality.
- Extract discriminative features from the image/video data.
- Use computer vision algorithms from the OpenCV library.
- Build a full computer vision system.
- Analyze the performance of a full computer vision system.

Bibliography

- [1] R. Szeliski, "Computer Vision: Algorithms and Applications", Springer, 2010, ISBN 978-1-84882-935-0.
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- [3] G. Bradski, A. Kaehler, "Learning OpenCV: Computer Vision with the OpenCV Library", O'Reilly Media, 2008, ISBN 978-0596516130.
- [4] M. Nixon, "Feature Extraction & Image Processing for Computer Vision", 3rd Edition, Academic Press, 2012, ISBN 978-0123965493.