Liverpool John Moores University

Title: IMAGE PROCESSING AND COMPUTER VISION
Status: Definitive
Code: **7000COMP** (120637)
Version Start Date: 01-08-2018

Owning School/Faculty: Computer Science
Teaching School/Faculty: Computer Science

Team	Leader
Sud Sudirman	Y

Academic Level:	FHEQ7	**Credit Value:**	20	**Total Delivered Hours:**	36
Total Learning Hours:	200	**Private Study:**	164		

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	12
Practical	24

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Artefacts	AS1	Implementation of Image Processing and Computer Vision	100	

Aims

To provide the underpinning knowledge, concepts and principles of Computer Vision and Image Processing.
To develop the expertise in Image Processing using GPGPU.
To develop the expertise in Computer Vision as a tool in computer games development.

Learning Outcomes

After completing the module the student should be able to:

1   Critically evaluate common Computer Vision and Image Processing algorithms.
2   Critically analyse theoretical and practical capabilities and limitation of Computer Vision.
3   Design and implement Image Processing and Computer Vision algorithms using GPGPU.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Implementation   1   2   3

Outline Syllabus

Sampling and Quantization
Colour Transformation
Spatial and Frequency
Spatial and Frequency Domain Filtering
Edge detection
Segmentation
Object recognition
GPGPU programming

Learning Activities

The lectures will cover the theory and concepts on Image Processing and Computer Vision. The practical sessions will involve tutor-led practical design and development activities that leds to the implementation of a computer software using GPGPU coding.

Notes

This module teaches the principles of image processing and its application using GPGPU in computer games, including colour transformation, spatial and frequency domain filtering and sampling. The module also covers computer vision algorithms with topics ranging from basic operations such as edge detections and segmentation to the more complex processes such as object recognition.