

Liverpool John Moores University

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Title: Advanced Video Forensics
Status: Definitive
Code: **7116AMP** (129234)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

Team	Leader
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Academic Level: FHEQ7 **Credit Value:** 20 **Total Delivered Hours:** 50
Total Learning Hours: 200 **Private Study:** 150

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	20
Practical	25
Tutorial	5

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Practice	AS1	Video equipment identification, setup and calibration	30	
Report	AS2	Advanced forensic video evidence handling tools. Investigation procedures. Processing evidence presentation	70	

Aims

To provide students with the theory, processes and techniques in the emerging field of Video Forensics

To equip the student with knowledge and understanding to critically analyse, select and apply appropriate techniques to transcode, authenticate, enhance, interpret and report on forensic media investigations

To foster an environment that encourages self-reliance, professionalism and promotes continuous learning, self-development and promotes a culture that acts to deal with the various potential forms of bias can have on the interpretation of results within the evidence chain

Learning Outcomes

After completing the module the student should be able to:

- 1 Recognise, specify, setup and calibrate common video capture and interrogation equipment
- 2 Critically appraise video materials obtained from a variety of common digital and analogue sources
- 3 Use advanced techniques to investigate, process, interpret and reconstruct forensic video materials to recognised standards using a variety of tools
- 4 Explain and report the procedures completed in a professional and accessible manner

Learning Outcomes of Assessments

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

Practical	1	2		
Report	1	2	3	4

Outline Syllabus

Advanced measurement scales tools and techniques

Advanced video visualisation tools charts and techniques

Adjustment for camera variation

Strategies and limitations of video capture equipment

Advanced spectrographic video analysis and interpretation

Forensic application of digital video processing

GOP analysis

Motion vectors

Advanced video enhancement and authentication techniques

Recognizing video forgery using HEX and EXIF

Frame averaging techniques

Analogue video systems and transfer techniques

Analogue transcoding

Advanced video authentication enhancement and interpretation techniques

Advanced forensic video interpretation methodology and calculations

*Preparation of documentation for such cases
Forensic video reporting and evidence for cross examination*

Learning Activities

Lectures, practical sessions and demonstrations

Notes

This module will provide students with a thorough understanding of the advanced practical theory, skills, processes and procedures pertinent to their current /potential role as Video Forensic Specialist. The focus will be on many common real-life situations although there may be scope to further specialise in specific areas of the field.

The Syllabus involves applying the Audio Forensic process chain appropriately with a keen awareness of the risks and implications associated with the standards and processes required for each procedure:

1. Capture/ Duplication/Handling of files from original format in professional manner
2. Transfer of authenticated files to digital analysis software
3. Manipulation and Interpretation of Audio files in Analysis Software for forensic investigation purposes
4. Documentation and Reporting completed to a level of competence where the student is able to defend materials in court