



Module Specification

AI and Computer Vision, Application in Healthcare

Version: 2023-24, v3.0, 07 Jun 2023

Contents

Module Specification	1
Part 1: Information	2
Part 2: Description	2
Part 3: Teaching and learning methods	3
Part 4: Assessment.....	4
Part 5: Contributes towards	6

Part 1: Information

Module title: AI and Computer Vision, Application in Healthcare

Module code: UFMFEV-30-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: Yes

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module will be delivered over two semesters where the students will be introduced to medical imaging, artificial intelligence (AI), and cyber security with a particular focus on the application of this technology. This will be delivered through a series of lecture, tutorials and interactive practical classes. By the end of the module the students will be able to complete basic programming, recognise the different types of health and healthcare data and apply imaging processing and machine learning approaches to better utilise this data.

Features: Not applicable

Educational aims: This module aims to provide the platform to introduce data analytics and programming that will enable the student to understand simple machine learning and informatics, as well as the broad applications and implications of AI and computer vision in healthcare.

Outline syllabus: Introduction to AI, Data Analytics and their Application to Healthcare

Mathematics and Computer Programming Fundamentals for Data Science

Simple Computer Vision and Machine Learning

Health Informatics and Big Data Frameworks

Medical Imaging

The Future of Computer Vision and Machine Learning in Healthcare

Defining Cyber Security

Part 3: Teaching and learning methods

Teaching and learning methods: The module content will be delivered through a combination of lectures (with embedded interactive sessions as appropriate) and computer lab sessions. In the latter, students will have the opportunity to work through a set of practical individual and group exercises modelled on Agile 'sprints' with on-the-spot support and formative assessment from the module team.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Critically discriminate between key concepts in the fields of AI, computer vision, autonomous systems, big data, and informatics.

MO2 Appraise common informatics tools and approaches, in general and for specific healthcare applications.

MO3 Apply informatics, AI and computer vision methods, and critically explain common pitfalls.

MO4 Critically evaluate existing implementations of AI, computer vision and informatics.

MO5 Demonstrate ethical and professional values with respect to the development of innovative technologies in Health Tech.

MO6 Evaluate data-security and privacy vulnerabilities in autonomous systems and informatics applications.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://rl.talis.com/3/uwe/lists/54D845E9-E859-5EF4-DE35-2F3647346405.html?lang=en-GB&login=1) via the following link <https://rl.talis.com/3/uwe/lists/54D845E9-E859-5EF4-DE35-2F3647346405.html?lang=en-GB&login=1>

Part 4: Assessment

Assessment strategy: There are two pieces of assessment: a data analysis report and a viva voce examination based on the written work.

In the Data Analysis Report (2500), students will summarise the practical work carried in one or more of the 'sprints', reporting to a hypothetical product owner and reflecting on the process for the sake of continuous improvement within their hypothetical organisation. In doing so, they will demonstrate their ability to apply informatics and AI techniques, and to evaluate and communicate the implications of their decisions.

The viva voce examination will focus on the topics of the written work, providing further opportunity for the students to demonstrate their independent achievement of the learning outcomes in a different format.

The resit will be the same as the first sit.

Assessment tasks:

Presentation (First Sit)

Description: Viva voce examination

Weighting: 30 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

Written Assignment (First Sit)

Description: Data analysis (2500 words).

Weighting: 70 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

Presentation (Resit)

Description: Viva voce examination

Weighting: 30 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

Written Assignment (Resit)

Description: Data analysis (2500 words)

Weighting: 70 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Health Technology [Frenchay] MSc 2023-24

Health Technology [Frenchay] MSc 2023-24