UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Advanced Topics in AI and Digital Healthcare
Module Code	COS7053-B
Academic Year	2022/3
Credits	20
School	Department of Computer Science
FHEQ Level	FHEQ Level 7

Contact Hours	
Type	Hours
Laboratories	24
Lectures	20
Tutorials	4
Directed Study	152

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims

The use of advanced AI techniques for real world situations requires advanced knowledge of both the tools and techniques themselves as well as the context within which they operate; ethically, legally, and societally. This module aims to provide students with knowledge advanced theories, concepts, techniques in Artificial Intelligence, Machine Learning and Data Mining applied to real world data as well as the regulatory and societal context surrounding them. Students will explore how tools and algorithms can be used in applied areas such as Digital Healthcare, Blockchain and a variety of other fields in terms of developing practical solutions that incorporate wider, non-technical issues.

The module will combine theoretical knowledge with hands on skills through selected software tools, platforms and online solutions.

Outline Syllabus

The module will include a variety of topics using up to date and industry informed content. A key focus is on Digital Healthcare subjects as well as the applications of Blockchain in AI, and the context of legal, ethical and governance concepts to AI applications.

Outline curriculum:
- AI ethics and legal requirements;
- Blockchain;
- Applications of Blockchain and AI;
- Data privacy;
- Digital Healthcare;
- AI healthcare applications.

The module curriculum will be regularly updated to reflect the latest case studies, datasets and cutting edge applications driven by industry and academia.

Learning Outcomes

Outcome Number	Description
1	Critically evaluate ethical, legal and societal issues in AI and applications of AI within specific fields.
2	Demonstrate skills in the selection and use of practical software tools, algorithms, platforms and online solutions through research based on their suitability.
3	Apply research and design skills in the creation of a solution to a specified practical problem within the field of AI.

Learning, Teaching and Assessment Strategy

Students will learn theoretical concepts through lecture sessions and practical skills through tutorials and laboratory sessions. Independent directed self-study will enhance and reinforce both theory and practice. Formal lectures will cover theoretical concepts and examples of practically applied solutions to specific subject areas, covering a variety of relevant topics in advanced fields of Artificial Intelligence. Tutorials and lab sessions will introduce methodologies, practical tools and software to achieve skills based learning objectives and for the development of solutions to exercises and coursework based assessments. Formative feedback will be provided during lectures, tutorials and labs based on discussion, questions and student practical work in labs.

The module content and delivery/assessment approach are heavily aimed towards embedding both the complex context of applying AI to real world problems, using industry relevant problems and real data wherever possible, as well as advanced practical skills using appropriately selected tools and algorithms. The module will embed case studies, practical demonstrations, and providing opportunities for students to conceive their own solutions for practical exercises and assessed coursework by exploring and stating the context of a problem, creating appropriate objectives and applying techniques to produce an appropriate solution. The virtual learning environment Canvas is the principal means for providing students with timely access to learning materials and for the submission of coursework. Other technologies such as MS Teams can facilitate short one-to-one discussions with students outside of contact hours to further support learning and provide formative feedback on their work.

Students will be assessed through two coursework assignments spread across the semester. Specified sub-topics within the module will have an individual coursework task to be completed requiring appropriate application of research, theory and practical skills using appropriate tools. Each assignment requires submission of a 2000 word report and any accompanying software supporting the work (models, scripts etc.) for a case study related to the specified topic. Where possible the coursework will allows students freedom to select data and/or applications in fields of their own choosing, reflecting their unique career aspirations, personal interests and cultural background.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Coursework - Written	Case study (odels.	50%
Summative	Coursework - Written	Case study (odels.	50%

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.
