University of Essex
MSc Artificial Intelligence
Module: UAI_PCOM7E January 2025 A

Collected Unit Notes

For convenience, unit notes from this module are collected here.

Unit 1: Introduction to Artificial Intelligence

The focus of this unit was a broad overview of the role of AI in current society, views about AI cognition as compared to human intelligence, and ethical and safety concerns surrounding the use of AI applications.

I also started a collaborative peer discussion on the use of automated AI systems to detect instances of copyright infringement, especially in regard to digital media assets.

Unit 2: The Benefits and Threats to Business

The focus of this unit was a continuation of the first unit and revolved around discussion of the business use cases for AI applications and the regulatory frameworks that might be necessary to ensure their legal and appropriate use in the real world.

Unit 3: Artificial Intelligence and Learning Systems

The focus of this unit was a discussion of components of AI-driven applications, including the standards used to evaluate their effectiveness.

I also summarized the peer responses from the collaborative discussion in Unit 1 on the use of automated AI systems to detect instances of copyright infringement in regard to digital media assets.

Unit 4: Understanding the Process of Developing a Learning System

The focus of this unit was a deep dive into the workflows and developmental processes used to design, code, and implement AI-driven applications and software solutions.

Unit 5: Approaches to Learning System Development – Focus on Machine Learning and Deep Learning

The focus of this unit was an introduction and overview of the differences between supervised and unsupervised machine learning algorithms, the different categories of machine learning algorithms in general, and the programmatic and data components of a fully-reified machine learning model.

Unit 6: Applying Machine Learning Algorithms to Develop a Learning System

The objective of this unit was to gain a baseline familiarity with the WEKA platform for developing machine learning solutions.

I also started a peer discussion of the difference between supervised and unsupervised machine learning algorithms in the student discussion forum, and drafted an outline proposal for the module's final project, an executive assessment of a hypothetical AI solution to a business process issue.

Unit 7: Feature Engineering and Representation

The focus of this unit was an introductory overview of machine learning feature engineering, including feature selection, training processes, and evaluative standards.

Unit 8: Application of Supervised Learning Approaches – Classification and Regression Tasks

The objectives of this unit were to gain an introductory familiarity with the CRISP-DM methodology for exploring data sets, as well as to continue to practice using the WEKA platform to develop a machine learning solution.

I also summarized the peer responses to the student forum discussion started in Unit 6 regarding the difference between supervised and unsupervised machine learning algorithms.

Unit 9: Application of Unsupervised Learning Approaches – Clustering

As in Unit 8, the objectives of this unit were to develop familiarity with the CRISP-DM methodology and to continue to practice using the WEKA platform to develop a machine learning solution.

I also completed the first major module project, an executive assessment of a hypothetical AI solution to a business process issue; for this project, I proposed an AI-based data analysis feature for a consumer smartphone software product.

Unit 10: Evaluating Learning Systems

The focus of this unit was to review industry standards for AI systems performance evaluation and to discuss methods for training and refining machine learning models.

I also completed a design proposal for this module's final project, an implementation specification for the AI-driven software solution discussed in this module's first project (Units 6 and 9).

Unit 11: Application of Training Procedure to Learning Algorithms and Evaluation of Learning Systems

As in Unit 10, the focus of this unit was to review industry standards for AI systems performance evaluation and to discuss methods for training and refining machine learning models.

Unit 12: Future of AI Systems and Professionalism

The focus of this unit was a discussion of emerging trends in AI technology, their implications to society at large, and the corresponding potential issues to professional practice standards for AI-driven solution developers.

I also completed this module's final project, an implementation specification for the AI-driven software solution discussed in this module's first project (Units 6 and 9) and outlined to a preliminary degree in Unit 10.