Course Description

Machine learning techniques are introduced including algorithms for implementing various stages of a machine learning system. Various stages include preprocessing, classification, clustering, regression analysis, and post processing. These stages can be implemented using statistical methods, non-parametric methods, neural networks, fuzzy inference systems, fuzzy neural systems.

Class Time

This class is offered asynchronously online. While you control when you watch videos and work on assignments, be aware of course pacing and specific deadlines.

Instructor Information

Dr. Robert P. Schumaker
Professor, Computer Science Dept.
rschumaker@uttyler.edu

Office Hours

Slack (preferred), Zoom, email

If your inquiry is grade-related, please make a Zoom or physical appointment

Textbook Information

Machine Learning with R (Lantz)
ISBN: 978-1-78829-586-4

Course Objective

This course is designed with the following goals:

- Identify methods for data cleaning, replacing missing data, and normalization
- Develop models for supervised classification using discriminant functions, neural networks and fuzzy logic systems
- Develop clustering models using K-means clustering, neural networks and fuzzy logic systems
- Develop software to analyze data using decision trees

Computer Account Access

Students will need a Patriot account and password for computer access. This information can be found at `https://www.uttyler.edu/ccs`

Course Documents and Slides

This class will use Canvas for course documents, slides, quizzes and other class-related materials. Students are encouraged to check the website frequently during the course of the semester to keep up to date about course activity.

Course Grading

Course evaluation will be based on the following:

Quizzes (5 @ 20 points each)	100
Total Points	100

Grading Scale

A	85.0 points or more
B	70.0 to 84.999 points
C	55.0 to 69.999 points
D	40.0 to 54.999 points
F	39.999 points or less

Tentative Course Schedule and Assignments

Date	Concept	Readings	Assignments
May 5-11	Introduction to Machine Learning	Ch 1	
	Introduction to R	Ch 2	
May 12-18	Clustering	Ch 3, 9	
	Decision Trees	Ch 5	
May 19-25	Naive Bayes	Ch 4	Quiz 1
	Market Basket Analysis	Ch 8	
May 26-Jun 1	Genetic Algorithms		Quiz 2
	Neural Networks	Ch 7	
Jun 2-8	Deep Learning		Quiz 3
	Support Vector Machines		
Jun 9-15	Q-Learning and Deep Q Networks		Quiz 4
	NLP and Text Analytics		
Jun 16-21	Cybersecurity Analytics		Quiz 5
	Machine Learning Application	Ch 10	