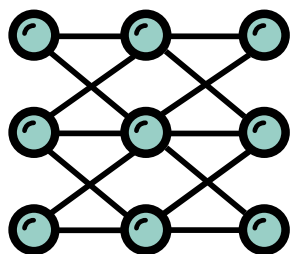


Spring 2024 Course offering

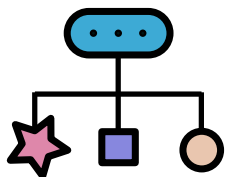
MATH 499V/599V: Topics In Mathematics - Mathematical Foundations of Machine Learning (3 credits), MWF 3:05 PM - 3:55 PM

Prerequisite: MATH 3083 (Linear Algebra) or MATH 3093 (Abstract Linear Algebra) for MATH 499V and **no prerequisite for MATH 599V (Graduate-level)**

Instructor: Jiahui Chen

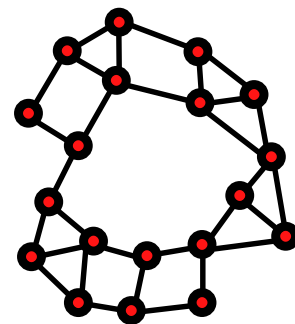


Neural Networks

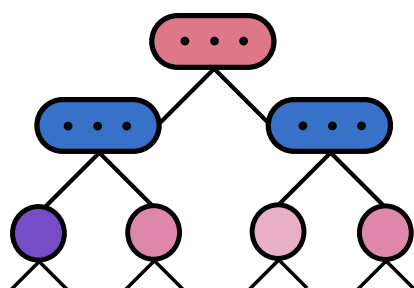


Classification

The first week crash course on Python 101

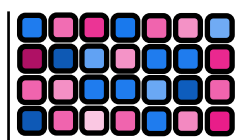


Graphs, Networks

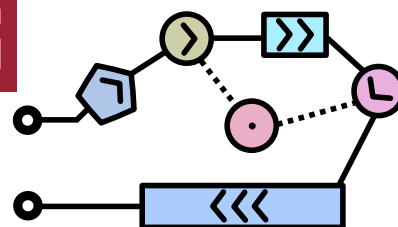


Decision Tree

MACHINE LEARNING



Data Analyze Algorithms LSTM, etc.



This is an introductory/intermediate course to Machine Learning (ML). ML is a powerful technique widely used in data-driven areas such as language processing, face recognition, image segmentation, finance, insurance, drug discovery, etc. In this course, we will discuss theoretical background of data types, ML algorithms and architectures, and focus on programming skills. Ultimately, each student is able to implement ML algorithm for practical applications. This course includes an introduction of Python, which covers popular Python packages and standard datasets, and ML algorithms, which are linear regression, logistic regression, k-means, support vector machine (SVM), Manifold learning, Naïve Bayes, Hopfield Network, decision trees, random forest, gradient boosting tree and deep neural networks (CNN, graph neural networks, etc.)

Note for MATH 599V: Students enrolled in the graduate-level course are subject to more rigorous evaluation criteria. In addition to the standard assignments, each homework set includes an additional, more advanced section. Alternatively, graduate students may be assigned homework more frequently compared to their undergraduate counterparts.

Books and references: No textbook is required for MATH 499V. "DATA MODELING FOR THE SCIENCES" by Presse and Sgouralis is required for MATH 599V. "The Elements of Statistical Learning" by Hastie, Tibshirani, and Friedman is recommended. All other materials will be provided in the form of slides and Python Jupyter Notebooks sourced from open-access resources.

For More Information, Email Jiahui Chen at jiahuic@uark.edu