CENG 499
Introduction to Machine Learning

Syllabus

- **Instructor**
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- **Assistant**
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- **Prerequisite**
  CENG 223, STAT 221, MATH 260, Good programming skills

- **Course objectives/goals**
  At the end of this course students will be able to
  - formulate machine learning problems and propose viable solutions to them
  - manipulate data in order to extract features and information necessary for solutions
  - design and evaluate machine learning systems
  - use tools created for data mining and machine learning
  - understand and apply different machine learning algorithms to appropriate problems

- **Grading (Tentative)**
  Attendance and Participation 10 % (Attendance will be weighted by pop quizzes)
  Assignments (3) 30 % (Bonuses are always provided for extra work)
  Project 10 % (Up to 3 people in a project team)
  Midterm 24 %
  Final 26 %

- **Some References (No Required Textbook)**

- **Important Notes**
  - In order to be allowed to the final test, students should satisfy ALL of the following requirements:
    - **Quiz weighted attendance** grade should cover at least 80% of the lectures
    - Submit all of the **assignments**
    - Score at least 40 (out of 100) on each of the **assignments**
    - Score at least 40 (out of 100) on the **midterm**
  - Medical reports (METU approved) for missing lectures/deadlines should be submitted within 1 week.
  - Cheating on attendance, homeworks, tests, etc. is punished severely (disciplinary action is taken)!

- **Outline (Tentative)**
  Review of basic probability and linear algebra, data preprocessing, classification, statistical methods and Bayesian inference, linear and non-linear regression, clustering, finding associations and patterns in data, attribute selection and dimension reduction techniques, supervised and unsupervised learning, kernels and support vector machines, combining classifiers, coverage of popular machine learning algorithms (decision trees, artificial neural networks, genetic algorithms, etc.) as time permits.