

# IDC 410: Machine Learning

Spring Semester 2025-26

## Assignment 06

Instructor: Prof. Shashikant R. Dugad

Uploaded on 17<sup>th</sup> February 2026 (Tuesday)

Submission: On or Before 22<sup>th</sup> February 2026 (Sunday) 23:00 hrs

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1. Download the MNSIT data on numbers 0 to 9.
  - a) Design the fully connected network for identifying numbers from a given image
  - b) Describe your own fully connected network.
  - c) Train this network with part of the downloaded data
  - d) Evaluate the performance of the trained model in full detail
  - e) Store all the weights (up to 3 decimal accuracy) in a text file with proper nomenclature to identify the connection
  - f) Store all the biases (up to 3 decimal accuracy) in a text file with proper nomenclature to identify the connection
2. Repeat the same exercise for a different design and report each step as defined above. Also make the comparative evaluation of both the design of your both the networks
3. Upload 25 individual images of ball inside fence and ball outside fence. Make two folders with following names
  - A. outside\_your\_roll\_no      and      inside\_your\_roll\_no
  - B. In each of these folders copy your images with following naming convention: out\_your\_roll\_no.jpg and in\_your\_roll\_no.jpg
  - C. Please DO NOT use and uppercase letters in naming folders or file names

***Please NOTE:***

***a) All of you have to complete your assignment in time***

***b) If you need any clarifications, feel free to contact TA's or me well in advance so that you can complete your assignment in time***