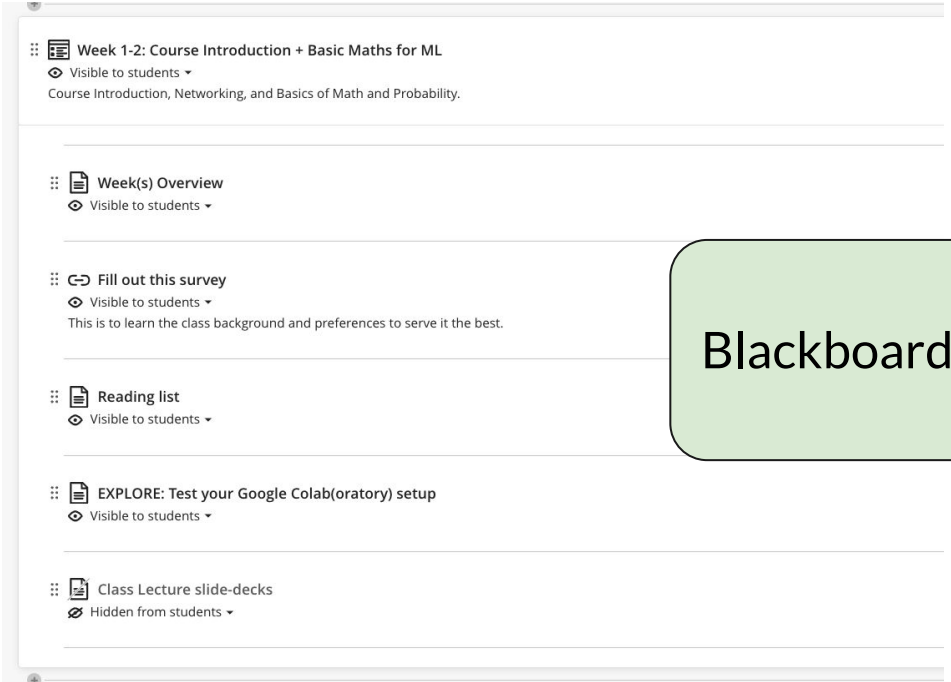
CIS 678 Machine Learning

Week 1: Introduction to CIS 678 (Machine Learning)



Blackboard walk through!

Week overview

This week we will:

- Get to know each other (networking)
- Set up our course objective, guidelines, and evaluation procedure.
- Set up our programming development environment(s), more specifically, **Google Colab**(oratory) on your **Google drive**.
- Test source code and report delivery methods.

Due:

- We don't have any programming assignments for this week.
- What you have to do is to make sure your **Jupyter Notebook** on your **Google Colab**(oratory) environment is ready to write and test code.

Networking!

About myself

- My name is Dr. Kamrul Hasan; you can call me as **Kamrul**
- Pronoun: he/him/his
- Born and raised in a tiny south Asian country, **Bangladesh**

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- **Probabilistic ML**
    - **Semi-supervised Learning**
    - **Generative AI** (example: LLMs ,ChatGPT)

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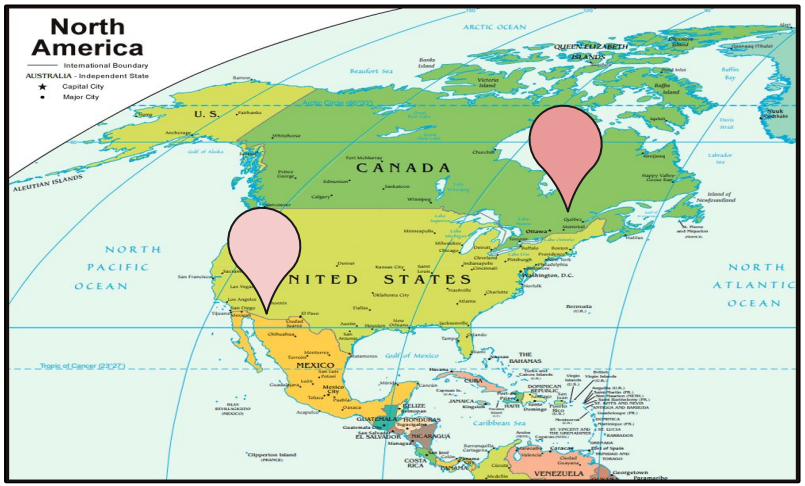

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- Travelling
- **Gardening**

About you!

- I hope I would get to know each of you as we progress
- We will meet in person and/or virtually as per our availability
- You will collaborate as groups
    - For discussion different topics: course specific and beyond
    - Final project
- I will seek your suggestions

CIS 678 Objective, guidelines, and evaluation procedure

General information (about the course)

Description: Broad introduction to

- Machine learning computer programs that improve their performance with experience.
- Topics include decision trees, neural networks, statistical methods, genetic algorithms, Bayesian learning methods, explanation-based goal regression, reinforcement learning, and learning frameworks.
- Includes an applied machine learning component that provides exposure to established algorithms and machine learning programs.
- Prerequisite: CIS 500 or CIS 661 or equivalent.

Objective: Completing this course, you should be able to:

- Explain the general idea of Machine Learning and connect to some practical applications,
- Exercise and apply some standard supervised and unsupervised ML techniques,
- Identify and build models using appropriate ML techniques including Deep Learning and Reinforcement Learning,
- Evaluate models for their effectiveness and appropriateness,
- Utilize some latest ML development tools and techniques in their projects,
- Communicate findings using effective visualization and documentation.

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General information (about the course)

Textbook(s): There are no required textbooks for this course.
Some good options include:

- Bishop: Pattern Recognition and Machine Learning.
- Murphy: Machine Learning: a Probabilistic Perspective.
- Deisenroth, Faisal, and Ong: Math for ML.
- Shalev-Shwartz and Ben-David: Understanding Machine Learning: From Theory to Algorithms.
- Deep Learning, Ian Good Fellow, Yoshua Bengio, and Aaron Courville
- Machine Learning with Python Cookbook: Practical Solutions from Preprocessing to Deep Learning Paperback – April 17 2018 by Chris Albon
- Practical Deep Learning for Coders, Fastai, (Jaremy Howard & Sylvain Gugger)

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Requirements:

- Computer/workstation terminal
- Blackboard and Google Drive access,
- Google colaboratory setup
- Ability to run Python (and install any requisite Python packages).
- If you have trouble, talk to the instructor, and we will work out a solution together.

Tentative Schedule

General information:

- See **Blackboard** for detailed schedule
- Planning and delivery per week(s)
- **Course materials** and **assignments** will be available on Blackboard **mostly** at the beginning of each week; sometimes as we progress.

Key dates:

- Jan 06:: Class begins (weekly planning & delivery)
- March 02-09: Spring Break
- April 19: Class Ends
- April 26: Semester ends

Update your Blackboard settings so you receive your emails, messages, and notifications in time.

Office: MAK D-2-216 (by appointment),
DCIH 530H (MW: 3:00- 4:00 pm)
Meeting Times: Online or in person

Evaluation

Grading distribution:

- Weekly reflections (including class & project meeting attendance & participation): 10%
  - *Class attendance: 5%*
  - *Project participation: 5% (at least 3 reporting with 3 weeks interval-time between two meetings)*
- Homework assignments/tests: 70%
  - *Two assignments: 2x10%*
  - *Midterm exam (including a shadow test): 20%*
  - *Final exam: 30%*
- Final project (group + individual performance): 20%
  - *Final Project: 10%*
  - *Documentation: 5%*
  - *Presentation: 5%*

Grade points:

A	93%	**C**	73%
A-	90%	**C-**	70%
B+	87%	**D+**	67%
B	83%	**D**	60%
B-	80%	**F**	Below 60%
C+	77%		

Note: Your final grade percentage will be rounded to the next integer percentage value. For example, an **89.1%** will round up to a **90%.**

Policy & expectation

Expectation: I expect the following to ensure your success in this course:

- check Blackboard on a regular basis for announcements, course material, and assignments
- stay up to date with required course materials.
- let me know how the class and my teaching can be improved
- adhere to the **GVSU policy of Academic Honesty** http://www.gvsu.edu/coursepolicies/

Course policy:

- Weekly reflections and homework assignments are to be completed **individually**.
- Due dates: All assignments will be due at 11:59pm Michigan time on the due date (unless otherwise stated, the first Monday following the assignment week).
- Late policy: You will lose 10% off of your maximum grade per day late, to a cap of five days (50% off), after which the assignment will not be accepted.

Policy & expectation

Academic Honesty: All students are expected to adhere to the academic honesty standards set forth by GVSU. In addition, students in this course are expected to adhere to the academic honesty guidelines as set forth by the school of computing. Details can be found at https://www.gvsu.edu/computing/academic-honesty-30.htm

I believe that you can learn a lot from your peers, both in the class and in the broader community. Therefore, I encourage collaboration with both. However, do not mistake this as a license to cheat. *Learning* from and with your peers is encouraged, but passing their work off as your own is prohibited.

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With respect to all individual assignments in this course:

- Document collaboration; **no electronic transfer of code** between students is permitted.
- Code used from internet (including tools such as **ChatGPT**) must be cited, an active link to that code. Ref. code should not solve the **entirety of an assigned** problem/project (i.e., don't have someone else do your project).
- You are encouraged to engage in conversations in **online forum**s, but do not post solutions or solicit others to complete your work for you.
- You are encouraged to talk about problems with each other in **non-technical terms** (i.e., not code).
- Ultimately, **you are responsible** for all aspects of your submissions. You should be able to explain and defend your submission if the work is entirely your own.

Useful resources

Blackboard: Course materials, assignments, grades, and announcements will be posted to Blackboard (https://lms.gvsu.edu/). It is your responsibility to stay informed.

Other academic resources: GVSU also provides opportunities for students to improve your academic skills through resources, such as:

- The writing center
- Speech lab
- Research consultants
- Library liaisons

Disability support : If you are in need of accommodations due to disability you must present a memo to me from Disability Support Resources (DSR), indicating the existence of a disability and the suggested reasonable accommodations. If you have not already done so, please contact the Disability Support Resources office (215 CON) by calling 331-2490 or email to dsrgvsu@gvsu.edu. Please note that I cannot provide accommodations based upon disability until I have received a copy of the DSR issued memo. All discussions will remain confidential. For more information, see https://www.gvsu.edu/dsr/

Religious observance: Many University students, staff, and faculty observe religious traditions from a variety of religions. The Religious Inclusion Policy acknowledges the right of students, staff, and faculty to engage in religious observances. If you need special accommodations to observe a religious holiday, make arrangements in advance with the instructor.