Machine Learning: Course Overview

Aritra Hazra

Department of Computer Science and Engineering,
Indian Institute of Technology Kharagpur,
Paschim Medinipur, West Bengal, India - 721302.

Email: *aritrah@cse.iitkgp.ac.in*

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Course Details

Course Webpage: (Visit regularly for periodic annoucements and updates.)
cse.iitkgp.ac.in/~aritrah/course/theory/ML/Spring2024/

CSE-Moodle Page: (Enroll here to submit projects for evaluation.)
moodlecse.iitkgp.ac.in/moodle/course/view.php?id=561
(Enrolment-Key will be shared through Email)

Class Timings: [Slot : A3] and [L-T-P : 3-0-0]
- Monday : 08:00am – 10:00am
- Tuesday : 12:00pm – 01:00pm

Venue: NC-324 (Nalanda Complex)

Instructor: Dr. Aritra Hazra (Assistant Professor, CSE)
Email: aritrah@cse.iitkgp.ac.in
Office: CSE-102, Ground Floor, CSE Dept.

Teaching Assistants

- Akash Kundu — M.Tech. student (CSE)
  [Emails: kunduakash91@gmail.com KUNDUAKASH91@KGPIAN.IITKGP.AC.IN]
- Ayan Maity — Ph.D. scholar (CSE)
  [Emails: ayanmaity201@gmail.com AYANMAITY201@KGPIAN.IITKGP.AC.IN]
- Chappidi Yoga Satwik — Dual-Degree student (CSE)
  [Emails: satwikchappidi24@gmail.com satwik.chappidi@iitkgp.ac.in]
- Kajori Ghosh — M.Tech. student (CSE)
  [Emails: kajorighosh4@gmail.com KAJORIGHOSH4@KGPIAN.IITKGP.AC.IN]
- Sumanta Dey — Ph.D. scholar (CSE)
  [Emails: sumanta.sunny@gmail.com SUMANTA.DEY@IITKGP.AC.IN]
- Suvadeep Hajra — Ph.D. scholar (CSE)
  [Emails: suvadeep.hajra@gmail.com SUVADEEP.HAJRA@KGPIAN.IITKGP.AC.IN]

Examination Dates and Evaluations

Tests:

- Mid-Semester (60 marks) :
  15-Feb-2024 (Thursday), 2:00pm – 4:00pm (AN)
- End-Semester (100 marks) :
  18-Apr-2024 (Thursday), 2:00pm – 5:00pm (AN)

Mini-Projects: (20 marks each, about 3 weeks time)

- Project 1 : 21-Jan-2024 – 10-Feb-2024
- Project 2 : 25-Feb-2024 – 16-Mar-2024
- Project 3 : 24-Mar-2024 – 13-Apr-2024
  (Programming in C / C++ / Java / Python)

Evaluation Criteria:

- 30% from Mid-Semester (i.e. 1/2 of Mid-Sem Marks)
- 50% from End-Semester (i.e. 1/2 of End-Sem Marks)
- 20% from Mini-Project (i.e. 1/3 of Total Project Marks)

Textbooks and References

1. Tom Mitchell; "Machine Learning"; First Edition, McGraw Hill, 1997.
2. Yaser S. Abu-Mostafa, Malik Magdon-Ismail, Hsuan-Tien Lin; "Learning From Data"; First Edition, AML Book, 2012.
3. Ethem Alpaydin; "Introduction to Machine Learning"; Fourth Edition, The MIT Press, March 2020.
4. Pang-Ning Tan, Michael Steinbach, Vipin Kumar; "Introduction to Data Mining"; Second Edition, Pearson Addison-Wesley, 2019.
5. Christopher Bishop; "Pattern Recognition and Machine Learning"; First Edition, Springer-Verlag New York, 2006.
6. Trevor Hastie, Robert Tibshirani, Jerome Friedman; "The Elements of Statistical Learning"; Second Edition, Springer, 2001.
7. Richard O. Duda, Peter E. Hart, David G. Stork; "Pattern Classification"; Second Edition, John Wiley & Sons, November 2000.

Advanced Study References

1. Kevin P. Murphy; "Machine Learning: A Probabilistic Perspective"; MIT Press, 2012.
2. Shai Shalev-Shwartz, Shai Ben-David; "Understanding Machine Learning: From Theory to Algorithms"; First Edition, Cambridge University Press, 2014.
3. Richard S. Sutton and Andrew G. Barto; "Reinforcement Learning: An Introduction"; 2nd Edition, MIT Press, 2020.
4. Ian Goodfellow, Yoshua Bengio and Aaron Courville; "Deep Learning"; MIT Press, 2016.
5. Christoph Molnar; "Interpretable Machine Learning"; Leanpub Publisher, 2019.

Here We Begin ...

~~Machine~~ Our Learning Objectives:

Problem: What is Machine Learning?

Feasibility: Can Machines really Learn?

Practicality: When can Machines Learn?

Algorithm: How can Machines Learn?

Theory: How can Machines Learn well enough?

Variants: What are various Machine Learning paradigms?

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Questions?

"The only stupid question is the one you were afraid to ask but never did."

– Rich Sutton

Thank You!