First Course Handout

Applied AI & ML Industry Projects Lab

B.Tech – CSE(AIML)
V Semester - ML and AIUP, Aug-Oct 2024
Department of Computer Science Engineering – AI and ML (CSM)
G.Pulla Reddy Engineering College (Autonomous), Kurnool, AP

Objective

The objective of the ***Applied AI & ML Industry Projects Lab*** programme is to provide undergraduate computer science engineering students with hands-on experience in coding and implementing artificial intelligence (AI) and machine learning (ML) algorithms using real-world industry data.

This lab will guide students through the practical application of key ML techniques, including principal component analysis (PCA), linear regression, logistic regression, support vector machines (SVM), Naive Bayes, decision tree classification (DTC), K-means clustering, probabilistic clustering, Multi-variate Gaussian Modelling (LDA) etc.

Through this lab, students will engage in project-based learning, applying AI and ML techniques they have learnt in their curriculum to address practical industry challenges.

This programme is designed to bridge the gap between theoretical knowledge and practical application, equipping students with the skills and expertise needed to excel in AI and ML roles within the industry.

By collaborating and interacting with industry professionals and working on real world datasets, students will gain invaluable insights into current industry practices and trends, enhancing their technical proficiency and preparing them for successful careers in the field.

Pre-requisites

- Completion/studying ML course of CSE(AIML) scheme 2020
- Students are expected to be familiar with basic concepts of
  - Linear Algebra, Properties and Matrices operations
  - Calculus – differential, integration
  - Convex Optimization etc.

Programme Schedule

Sr. No.	Date	Project Topic	Comments
1	08-09-2024 - Sunday Duration: 1.5 Hrs	Introduction and State of the Art in AI & ML	Online Class
09-09-2024 – Monday 8:00 PM – Next Week Project Details Announcement – Topic, Data Set, Shell Code etc. Announcement Channels – Google Class, Industry Projects WhatsApp Group.			
2	14-09-2024 - Saturday Duration: 1.5 Hrs	Principal Component Analysis (PCA) – Overview/Recap, Interactive Q&A	Online – Google Class
3	15-09-2024 - Sunday Duration: 1.5 Hrs	Principal Component Analysis (PCA) – Implementation, Output Demonstration, Interactive Q&A	Online – Google Class

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15-09-2024 – Sunday 11:59 PM - Deadline to upload the project code submission by all students in Google Class.

28-09-2024 – Saturday 10:30 AM – Next Project Details Announcement – Topic, Data Set, Shell Code etc. Announcement Channels – Google Class, Industry Projects WhatsApp Group.

Internal Exams Break – 17-09-2024 to 28-09-2024

4	28-09-2024 - Saturday Duration: 1.5 Hrs	Linear Regression – Model Overview/Recap, Project Description, and Interactive Q&A	Online – Google Class
5	29-09-2024 - Sunday Duration: 1.5 Hrs	Linear Regression – Model Building, Output Demonstration, Q&A	Online – Google Class

03-09-2024 – Thursday 11:59 PM - Deadline to upload the project code submission by all students in Google Class.

05-09-2024 – Saturday 10:00 AM – Next Week Project Details Announcement – Topic, Data Set, Shell Code etc. Announcement Channels – Google Class, Industry Projects WhatsApp Group.

6	05-10-2024 - Saturday Duration: 1.5 Hrs	Logistic Regression – Model Overview/Recap, Project Description, and Interactive Q&A	Online – Google Class
7	06-10-2024 - Sunday Duration: 1.5 Hrs	Logistic Regression – Model Building, Output Demonstration, Q&A	Online – Google Class

10-10-2024 – Thursday 11:59 PM - Deadline to upload the project code submission by all students in Google Class.

19-10-2024 – Saturday 10:30 AM – Next Week Project Details Announcement – Topic, Data Set, Shell Code etc. Announcement Channels – Google Class, Industry Projects WhatsApp Group.

8	19-10-2024 - Saturday Duration: 1.5 Hrs	Support Vector Machines (SVM) – Model Overview/Recap, Project Description, and Interactive Q&A	Online – Google Class
9	20-10-2024 - Sunday Duration: 1.5 Hrs	Support Vector Machines (SVM) – Model Building, Output Demonstration, Q&A	Online – Google Class

24-10-2024 – Thursday 11:59 PM - Deadline to upload the project code submission by all students in Google Class.

26-10-2024 – Saturday 10:30 AM – Next Week Project Details Announcement – Topic, Data Set, Shell Code etc. Announcement Channels – Google Class, Industry Projects WhatsApp Group.

10	26-10-2024 - Saturday Duration: 1.5 Hrs	Naïve Bayes – Model Overview/Recap, Project Description, and Interactive Q&A	Online – Google Class
11	27-10-2024 - Sunday Duration: 1.5 Hrs	Naïve Bayes – Model Building, Output Demonstration, Q&A	Online – Google Class

31-10-2024 – Thursday 11:59 PM - Deadline to upload the project code submission by all students in Google Class.

02-11-2024 – Saturday 10:30 AM – Next Week Project Details Announcement – Topic, Data Set, Shell Code etc. Announcement Channels – Google Class, Industry Projects WhatsApp Group

12	02-11-2024 - Saturday Duration: 1.5 Hrs	K Means Clustering – Model Overview/Recap, Project Description, and Interactive Q&A	Online – Google Class
13	02-11-2024 - Sunday Duration: 1.5 Hrs	K Means Clustering – Model Building, Output Demonstration, Q&A	Online – Google Class

07-11-2024 – Thursday 11:59 PM - Deadline to upload the project code submission by all students in Google Class.

09-11-2024 – Saturday 10:30 AM – Next Week Project Details Announcement – Topic, Data Set, Shell Code etc. Announcement Channels – Google Class, Industry Projects WhatsApp Group.

14	09-11-2024 - Saturday Duration: 1.5 Hrs	Linear/Gaussian Discriminant Analysis – L/GDA – Model Overview/Recap, Project Description, and Interactive Q&A	Online – Google Class
15	10-11-2024 - Sunday Duration: 1.5 Hrs	Linear/Gaussian Discriminant Analysis – L/GDA – Model Building, Output Demonstration, Q&A	Online – Google Class
12-11-2024 – Tuesday 11:59 PM - Deadline to upload the project code submission by all students in Google Class.			
16	**13-11-2024 – Wednesday 10:00 AM to 11:00 AM IST**	**Valedictory Session** Issuance of Applied AI & ML Industry Projects Program/Course Completion Certificates to Students (by Brillium Technologies)	**Physical In-person session** **Venue: GPREC Campus, Kurnool***

* The exact venue location in the GPREC campus will be communicated by the lab coordinator

One more session would be offline in GPREC campus and the details of the same would be communicated by the programme coordinator to the students.

Guest Lecture Timings:
Saturdays: 10:30 AM IST – 12:00 Noon IST
Sundays: 10:30 AM IST – 12:00 Noon IST
Mondays: 6:30 PM IST – 8:00 PM IST

Development Environment

- Computing Language – Python
- IDE – Visual Studio Code with Jupyter Notebook
- Online Data Sets for Training - Datacamp, Kaggle, Wikipedia

Instructor

Instructor	
Venkateswar Reddy Melachervu (alumnus of GPREC, ECE Class of '92) CTO, Brillium Technologies, Bengaluru Email: **venkat.reddy.gf@gprec.ac.in** Profile: LinkedIn	Visiting Faculty

Coordination

All the activities of this programme – lecture venues, weekly projects details announcements, general announcements, changes in lecture timings, etc. will be coordinated by CSM faculty member Sri V.Suresh.

Channels of Communication and Announcements

- Google Classroom
- Whatsapp group **- Applied AI & ML Industry Projects Lab**
- Emails (Strictly GPREC email addresses only)

Programme Coordinator	
Prof. V.Suresh	Faculty Member, CSM

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Email: **vsuresh.ecs@gprec.ac.in**	

Reference Books

- Pattern Recognition and Machine Learning by Chris Bishop, 2006 – PDF Link
- Machine Learning using Python by Manaranjan Pradhan and U Dinesh Kumar, Wiley 2019 – PDF Link

Policies

- **Attendance:** All sessions are expected to be attended by all the enrolled students. In case of inability to attend, prior information is expected to be provided by the student to the coordinator with a copy to the visiting faculty
- **Project Submissions:** Duly completed projects (Jupyter NB file and a PDF of the Jupyter NB file) are expected to be submitted through google class prior to the deadline. In case of inability to complete due various unforeseen circumstance, students are expected to seek extension for the submission deadline.
- **Academic Integrity:** Students are expected to uphold the highest standards of academic integrity in all assignments for the Applied AI & ML Industry Projects Lab. Each assignment must be the student's own work, and all sources and collaborators must be properly acknowledged. By submitting their completed project source code, students confirm that they have adhered to this integrity policy and completed their work in an honest and ethical manner.

Additional Information

For students interested in engaging with special projects in the field of Gen AI, please reach out to the visiting faculty at **venkat@brillium.in** for further details and opportunities.

Contact Information

For any questions or concerns or further details on this programme, please contact **Program Coordinator** during office hours or via email.

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