DRONACHARYA
College of Engineering

Khentawas, Farrukh Nagar, Gurugram, Haryana
Approved by: All India Council for Technical Education (AICTE), New Delhi
Affiliated to: Gurugram University, Gurugram

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI&ML)**

**ACADEMIC YEAR 2023-24**

**SEMESTER VII**

## Deep Learning (PCC-AI-401G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Apply basic mathematical concepts in Deep Learning |
| (CO2) | Work with powerful framework for supervised learning |
| (CO3) | Deal with Convolution Neural Networks |
| (CO4) | Analyze various types efficient data encoders |
| (CO5) | Apply various network models in deep learning |

## Project-II (LC-AI-441G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Design a system / process or gain research insight into a defined problem as would be encountered in engineering practice taking into consideration its impact on global, economic, environmental and social context. |

## Project-III (LC-AI-442G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Design a system / process or gain research insight into a defined problem as would be encountered in engineering practice taking into |

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| | consideration its impact on global, economic, environmental and social context. |

## Advanced Python Programming (PEC-DS-405G)

| Course Outcome (CO) | Details of Course Outcomes |
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| (CO1) | Understand the nuances of Data Structures |
| (CO2) | Derive an understanding of a classes and objects and their potential |
| (CO3) | Gain knowledge of multithreading concepts and implementing the same |
| (CO4) | Appreciate the difference between different data processing techniques |
| (CO5) | Learn to apply Python features for Data Science |
| (CO6) | Get an insight into Metrics Analysis |
| (CO7) | Develop web-apps and build models for IoT |

## Reinforcement Learning (PEC-AI-405G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Define the key features of reinforcement learning (RL) that distinguishes it from AI and noninteractive machine learning |
| (CO2) | Decide if an application problem should be formulated as a RL problem and state what algorithm is best suited for addressing it |
| (CO3) | Describe and implement in code common RL algorithms |

## Web Intelligence (PEC-AI-418G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Acquire the knowledge on topics and benefits of Web Intelligence |
| (CO2) | Acquire the ability to build models of information retrieval, semantic webs, search engines, and web mining. |
| (CO3) | Understand the basic ideas of Multimedia Information Retrieval |
| (CO4) | Acquire knowledge to use web crawlers and fetch relevant information |
| (CO5) | Acquire knowledge to refine the social network design approached used for developing intelligent web |
| (CO6) | Apply the knowledge of different web intelligence based algorithms in practical applications |

## Social Network Analysis (PEC-AI-404G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Learn basic concepts in Social web |
| (CO2) | Work with Network features Visualizing approaches |
| (CO3) | Deal with Link predictions and recommendation systems |
| (CO4) | Analyze various types efficient network analysis algorithms |
| (CO5) | Learn social influence and related statistics in influence maximization |

## Recommender Systems (PEC-AI-406G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Characterize different types of Recommender Systems, map a given real world problem to appropriate model. |
| (CO2) | understand and identify the stages and issues in the deployment of the system |
| (CO3) | Apply principles and techniques of recommender systems in applications related to recommender systems design and analysis |
| (CO4) | Analyze and evaluate various recommender algorithms |

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| **(CO5)** | Implement appropriate recommender system for real world applications |

## Computer Vision and Pattern Recognition (PEC-AI-407G)

| Course Outcome (CO) | Details of Course Outcomes |
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| **(CO1)** | Provide an introduction to computer vision including fundamentals of image formation |
| **(CO2)** | Provide a clear view of image formation |
| **(CO3)** | Provide a clear view of image processing Provide knowledge about Computational photography |
| **(CO4)** | Provide knowledge about Image rendering |

## Decision Support and Intelligent System (PEC-AI-408G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| **(CO1)** | Gain knowledge on Business Intelligence, Analytics and Decision Support |
| **(CO2)** | Understand the technologies for Decision making |
| **(CO3)** | Apply predictive modeling techniques |
| **(CO4)** | Apply sentiment analysis techniques |
| **(CO5)** | Gain knowledge on Multi-criteria Decision-making systems |
| **(CO6)** | Gain knowledge on Automated decision systems |

## AIML Applications in IoT (PEC-AI-409G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| **(CO1)** | Understand the need of Analytics on IoT data. |
| **(CO2)** | Identify different data formats, protocols and applications of AIML on IoT data |
| **(CO3)** | Understand different domains like Personal healthcare, home, Industrial data and smart cities data. |

## Intelligent Robots and Drone Technology (PEC-AI-410G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Understand the basic principles behind Robotics intelligence |
| (CO2) | Design practical robots using appropriate measures |
| (CO3) | Design and simulation of neural network for image recognition |
| (CO4) | Understand the fundamental concepts of drone technology |
| (CO5) | Understand and describe basic regulations applicable to UAV flight |
| (CO6) | Apply principles of robotics intelligence and drone technology for solving real world problems |

## Artificial Intelligence for Cyber security (PEC-AI-411G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Understand the cyber threats, attacks and vulnerabilities and its defensive mechanism |
| (CO2) | Understand and implement various AI techniques to detect cyber attacks |
| (CO3) | The recent challenges in AI related to cyber security and able to develop new security solutions to the real time applications |

## Machine Learning for Medical Image Analysis (PEC-AI-412G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Understand the fundamentals of medical imaging system |
| (CO2) | Learn to extract, model, and analyse information from medical data |
| (CO3) | To develop applications to help diagnosis, treatment and monitoring of diseases through machine intelligence algorithms |
| (CO4) | Understand the working of deep learning models for medical imaging |

## AI in Healthcare (PEC-AI-413G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Knowhow the basics of AIML. |
| (CO2) | Got insight of the use of AI for diagnosis and patient monitoring in the real world. |
| (CO3) | Manage the uses of extract value-adding outcomes from medical literature using AI Techniques. |

## Speech and Language Processing using Deep Learning (PEC-AI-414G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Describe ways to represent speech and words |
| (CO2) | Demonstrate the working of sequence models for text |
| (CO3) | Adapt a dialogue system to a specific domain |
| (CO4) | Use signal processing techniques to analyze/represent the speech signal |
| (CO5) | Execute trials of speech/language systems |

## Image and Video Analytics (PEC-DS-406G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| (CO1) | Understand basic image and video processing concepts |
| (CO2) | Explore both the theoretical and practical aspects of intelligent perception and understanding of images. |
| (CO3) | Apply principles and techniques of video processing in applications related to intelligent and automated visual system design and analysis. |
| (CO4) | Analyze techniques for action representation and recognition |

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| **(CO5)** | Develop algorithms that can perform high-level visual recognition tasks on real-world images and videos. |

## Intelligent Information Retrieval (PEC-AI-415G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| **(CO1)** | Describe the genesis and variety of information retrieval situations |
| **(CO2)** | Construct the variety of information retrieval models and techniques |
| **(CO3)** | Execute methods and principles of information retrieval systems |
| **(CO4)** | Develop Methods for implementing information retrieval systems |
| **(CO5)** | Interpret Characteristics of operational and experimental information retrieval systems |
| **(CO6)** | Evaluate the emerging information retrieval practices in library services and on the Web |

## Open Source Programming (OEC-DS-431G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| **(CO1)** | Use Django framework to create basic website. |
| **(CO2)** | Use Ruby on Rails framework to quickly develop websites. |
| **(CO3)** | Use Express framework along with Node JS to render webpages effectively |
| **(CO4)** | Use Mongo DB along with Express to display dynamic web content |
| **(CO5)** | Use Angular JS to extend an enhance HTML pages |
| **(CO6)** | Implementing web-based solution effectively using different web frameworks. |

## Data Visualization & Tableau (OEC-AI-431G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| **(CO1)** | Understand data fundamental, analyse the data methodology, techniques, powerful dashboards, Power BI & Visualization power of data along with a strong focus on case studies to ensure hands on learning. |

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| **(CO2)** | Learn the powerful data visualization tool like Advanced version of Excel, Power Map, Power BI, Business Intelligence software, Tableau software & other open source tools etc to present your analysis. |

## Information Storage and Management (OEC-DS-432G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| **(CO1)** | Acquire the knowledge on the components of storage infrastructure |
| **(CO2)** | Acquire the ability to evaluate storage architectures including storage subsystems |
| **(CO3)** | Understand the business continuity, backup and recovery methods. |
| **(CO4)** | Appreciate the concepts of storage security and information security applied to virtual machine |
| **(CO5)** | Apply the knowledge for storage infrastructure |
| **(CO6)** | Acquire the knowledge on structure of cloud computing and its techniques |

## Virtualization (OEC-DS-433G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| **(CO1)** | Illustrate the process of virtualization. |
| **(CO2)** | Create and configure the hypervisors in cloud. |
| **(CO3)** | Apply the virtualization concepts in server and manage the storage capacity. |
| **(CO4)** | Analyze, identify and select suitable type of virtualization. |
| **(CO5)** | Use the management tools for managing the virtualized cloud infrastructure. |
| **(CO6)** | Apply suitable automation and security methods on data centre |

## R Programming (OEC-AI-434G)

| Course Outcome (CO) | Details of Course Outcomes |
|---|---|
| **(CO1)** | Familiarize themselves with R and the RStudio IDE |
| **(CO2)** | Understand and use R functions |

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| **(CO3)** | Install and load a package into your R library |
| **(CO4)** | Get insight into the capabilities of the language as a productivity tool for data manipulation and statistical analyses. |