CENTRAL INSTITUTE OF MANAGEMENT NEPAL

Executive PG Programme in

MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE

Detect Your Next Step

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Why
CIMN ?

433% Highest Hike

₹**1.23 Cr** Highest Salary

50% Avg Salary Hike

7.1+ Million Learners

4800+ Industry Experts

1600+ Hiring Partners

Program
Highlights

Executive PG Programme from CIMN and Alumni Status

Get certified by CIMN and gain alumni status on successful completion of the program.

**For the Industry, by the Industry**

Learn and apply concepts on industry projects and work on a Capstone Project along with personalised industry mentorship.

Fastest Route

Road Closed

Blended Learning

Learn with the ease and flexibility of recorded sessions as well as live sessions, designed to ensure a wholesome learning experience.

Cutting-Edge Curriculum

Master advanced ML and AI concepts developed by industry experts and faculty.
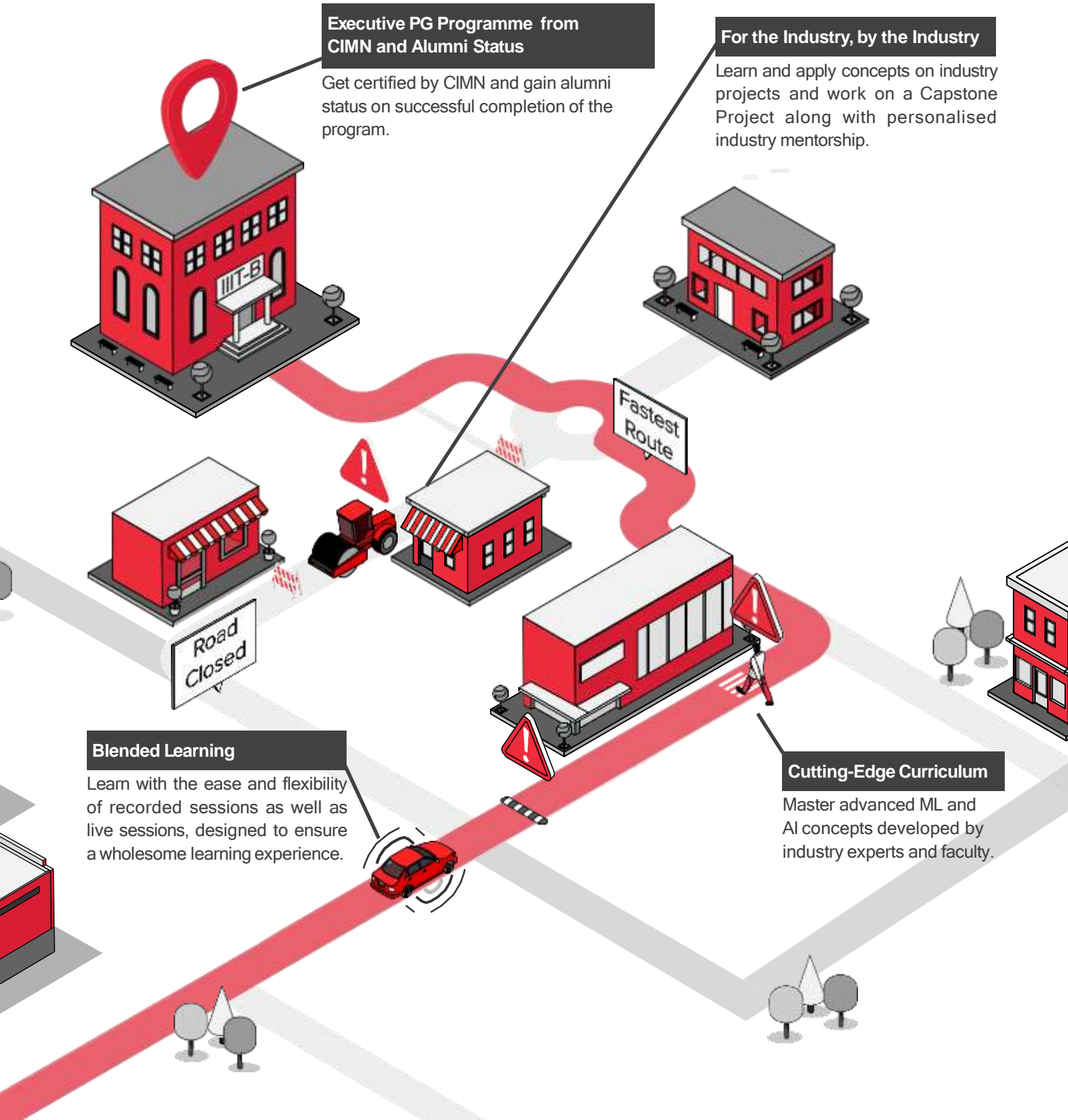
upGrad Learning
Experience

Student Support Team

- We have a dedicated Student Support Team for handling your queries via email or callback requests
- Student Support is available 7 days a week, 24*7 for non-academic queries. You can write to us via info@cim.edu.np or for urgent queries, use the "Talk to Us" option on the Learn platform

## Networking & Learning Experience

- Live Discussion forum for peer to peer doubt resolution monitored by technical experts
- Reverse knowledge transfer sessions (FLIP classrooms) with learners tutoring fellow batchmates
- Peer to peer networking opportunities with alumni pool of 10000+
- Lab walkthroughs of industry-driven projects

Industry Mentors

- Fortnightly personalised group (1:8) mentorship sessions with industry experts for proactive mentoring
- Calls with industry experts for personalised feedback & guidance spread over 3 months
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Hands-on Projects

- 12+ projects & assignments and a Capstone Project to choose from 6 options
- Live coding classes on Kaggle & OpenCV & sessions on building your Github profile
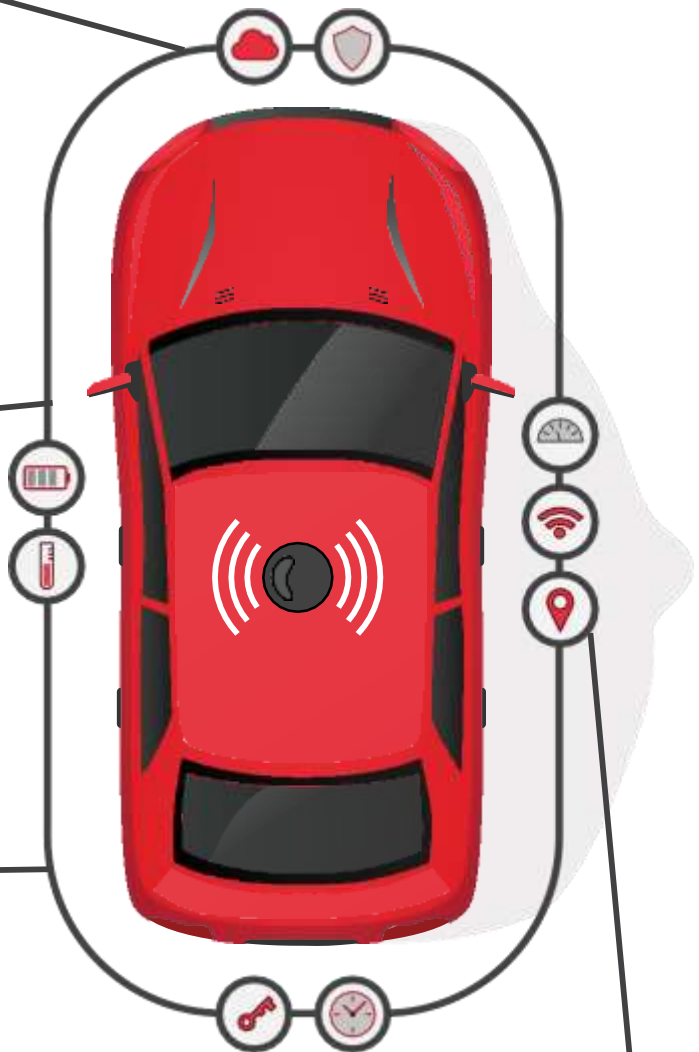
Industry **Projects**

Telecom Churn

Solve the most crucial business problem for a leading telecom operator in Asia and Southeast Asia - predicting customer churn.

Classification of Customer Complaints

Create a solution that will help in identifying the type of complaint ticket raised by the customers of a multinational bank.

Credit Card Fraud Detection

Build a machine learning model capable of detecting fraudulent transactions. Here you have to predict fraudulent credit card transactions with the help of machine learning models.

Melanoma Detection Assignment

Build a neural network from scratch in Tensorflow to identify the type of skin cancer from image.

Train an Agent to play Tic Tac Toe

Learners will apply Q-Learning to train an RL agent to play the game of numerical Tic Tac Toe.

Gesture Recognition

Make a Smart TV system which can control the TV with user's hand gestures as the remote control.

News Recommender System

Build a model using the concepts of natural language processing and recommender systems to recommend news stories to users on a popular news platform.

Style Transfer using GAN's

Build a model for converting MRI images from one type (T1) into other (T2) and vice versa. CycleGAN model is used for producing T2 type MRI images given T1 type input MRI images.

Maximizing Profit of Cab Driver using RL

Learners will use the Markov Decision Process & Q-Learning to build an RL agent that learns to choose the best request so as to maximize the total profit earned by the agent that day.

Custom Entity Detection in Healthcare Data

You will build a custom NER to get the list of diseases and their treatment from a medical healthcare dataset.

Eye for the Blind Data

Build a model that can help any visually impaired person in understanding image present before them. It is a deep learning model which can explain the content of an image in the form of speech. You will build a custom NER to get the list of diseases and their treatment from a medical healthcare dataset.

Sentiment Analysis based Product Recommender system

Build a sentiment analysis based product recommendation system to recommend the similar products to the users. Sentiment analysis is used to fine tune the product recommendation system.

Sales Forecasting

Predict the sales for a european pharma giant using a host of different types of variables. Apply VAR and VARMAX models to build the appropriate model.

Machine Translation System

Build a Model for converting MRI images from one type (T1) into other (T2) and vice versa. CycleGAN model is used for producing T2 type MRI images given T1 type input MRI images.

Face Mask detection

Create a custom object detector using the YOLO algorithm to detect the presence of face masks in the images of different people.
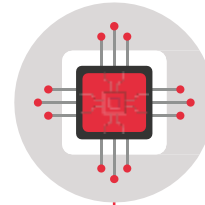
Learning
Path

Data Science Toolkit
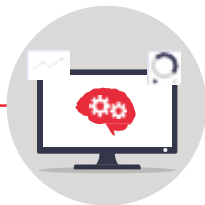Preparatory Content

Statistics and Git Essentials
(5 weeks)

Machine Learning I
7 weeks

Natural Language Processing
7 weeks

Deep Learning
8 weeks

Machine Learning II
7 weeks

Electives (Advanced DL/ Advanced NLP/ AI Leadership)
10 weeks
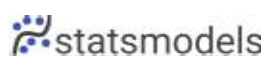
Deployment & Capstone
4 weeks

Executive PG Programme in Machine Learning and Artificial Intelligence

Programming Tools, Languages and Libraries

Program
Curriculum

PRE-PROGRAM PREPARATORY CONTENT (3 WEEKS)

1 **INTRODUCTION TO PYTHON**
Build a foundation for the most in-demand programming language of the 21st century.

2 **PYTHON FOR DATA SCIENCE**
Learn how to manipulate datasets in Python using Pandas, which is the most powerful library for data preparation and analysis.

3 **DATA VISUALISATION IN PYTHON**
Humans are visual learners and hence no task related to data is complete without visualisation. Learn to plot and interpret various graphs in Python and observe how they make data analysis and drawing insights easier.

4 **DATA ANALYSIS USING SQL**
Data in companies is definitely not stored in excel sheets! Learn the fundamentals of database and extract information from RDBMS using the structured query language.

5 **ADVANCED SQL AND BEST PRACTICES**
Apply advanced SQL concepts like windowing and procedures to derive insights from data and answer pertinent business questions.

6 **DATA ANALYSIS IN EXCEL**
Taught by one of the most renowned data scientists in the country (S. MAITHU), this module takes you from a beginner level Excel user to an almost professional user.

7 **ANALYTICS PROBLEM SOLVING**
This module covers concepts of the CRISP-DM framework for business problem-solving.

8 **MATH FOR MACHINE LEARNING**
Learn the prerequisite mathematical tools and techniques for ML - Linear Algebra and Multi-variable Calculus.

STATISTICS AND EDA (5 WEEKS)

1 **EXPLORATORY DATA ANALYSIS**
Learn how to find and analyse the patterns in the data to draw actionable insights.

2 **CLOUD ESSENTIALS: INTRO TO GIT & GITHUB**
Learn version control, collaborating, portfolio making using git. Understand the process of creating repository. Learn the process of creating github portfolio using github pages with jekyll

3 **INFERENTIAL STATISTICS**
Build a strong statistical foundation and learn how to 'infer' insights from a huge population using a small sample.

4 **HYPOTHESIS TESTING**
Understand how to formulate and validate hypothesis for a population to solve real-life business problems.

5 **LENDING CLUB CASE STUDY**
Determine which customers are at risk of default and what are their characteristics so as to avoid providing loans to similar people in the future.

MACHINE LEARNING I   (7 WEEKS)

1 **LINEAR REGRESSION**
Venture into the machine learning community by learning how one variable can be predicted using several other variables through a housing dataset where you will predict the prices of houses based on various factors.

2 **LINEAR REGRESSION ASSIGNMENT**
Build a model to understand the factors car prices vary on and help a Chinese company enter the US car market.

3 **LOGISTIC REGRESSION**
Learn your first binary classification technique by determining whether customers of a telecom operator are likely to churn to help the business retain customers.

4 **NAIVE BAYES**
Understand the basic building blocks of Naive Bayes and learn how to build an SMS Spam Ham Classifier using Naive Bayes technique.

5 **MODEL SELECTION**
Learn the pros and cons of simple and complex models and the different methods for quantifying model complexity, along with regularisation and cross validation.

*Syllabus is subject to change by the university

MACHINE LEARNING II   (7 WEEKS)

1 ADVANCED REGRESSION
Understand generalised regression and different feature selection techniques, along with the perils of overfitting and how it can be countered using regularisation.

2 ADVANCED REGRESSION ASSIGNMENT
Build a model to understand the factors house prices vary on and help an American company enter the Australian housing market.

3 SUPPORT VECTOR MACHINE (OPTIONAL)
Learn how to find a maximal marginal classifier using SVM, and use them to detect spam emails, recognise alphabets and more!

4 TREE MODELS
Learn how the human decision making process can be replicated using a decision tree and other powerful ensemble algorithms.

5 MODEL SELECTION: PRACTICAL CONSIDERATIONS
Given a business problem, how do you choose the best algorithm? Learn a few practical tips for doing this here.

6 BOOSTING
Learn how weak learners can be 'boosted' with the help of each other and become strong learners using different boosting algorithms such as Adaboost, GBM, and XGBoost.

7 UNSUPERVISED LEARNING: CLUSTERING
Learn how to group elements into different clusters when you don't have any pre-defined labels to segregate them through K-means clustering, hierarchical clustering, and more.

8 UNSUPERVISED LEARNING: PRINCIPAL COMPONENT ANALYSIS
Understand important concepts related to dimensionality reduction, the basic idea and the learning algorithm of PCA, and its practical applications on supervised and unsupervised problems.

9 TELECOM CHURN CASE STUDY
Solve the most crucial business problem for a leading telecom operator in India and southeast Asia - predicting customer churn.

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DEEP LEARNING   (8 WEEKS)

1 INTRODUCTION TO NEURAL NETWORKS
Learn the most sophisticated and cutting-edge technique in machine learning - Artificial Neural Networks or ANNs.

2 CONVOLUTIONAL NEURAL NETWORKS - INDUSTRY APPLICATIONS
Learn the basics of CNN and OpenCV and apply it to Computer Vision tasks like detecting anomalies in chest X-Ray scans, vehicle detection to count and categorise them to help the government ascertain the width and strength of the road.

3 CONVOLUTIONAL NEURAL NETWORKS - ASSIGNMENT
Build a neural network from scratch in Tensorflow to identify the type of skin cancer from image

4 RECURRENT NEURAL NETWORKS
Ever wondered what goes behind machine translation, sentiment analysis, speech recognition etc. ? Learn how RNN helps in these areas having sequential data like text, speech, and videos, etc.

5 NEURAL NETWORKS PROJECT: GESTURE RECOGNITION
Make a Smart TV system which can control the TV with user's hand gestures as the remote control.

NATURAL LANGUAGE PROCESSING   (7 WEEKS)

1 LEXICAL PROCESSING
Do you get annoyed by the constant spams in yor mail box? Wouldn't it be nice if we had a program to check your spellings?
In this module learn how to build a spell checker & spam detector using techniques like phonetic hashing,bag-of-words, TF-IDF, etc.

2 SYNTACTICAL PROCESSING
Learn how to analyse the syntax or the grammatical structure of sentences using POS tagging and Dependency parsing.

3 SYNTACTIC PROCESSING - ASSIGNMENT
Use the techniques such as POS tagging and Dependency parsing to extract information from unstructured text data.

4 SEMANTIC PROCESSING
Learn the most interesting area in the field of NLP and understand different techniques like word-embeddings, topic modelling to build an application that extracts opinions about socially relevant issues.

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5 **CASE STUDY: CLASSIFYING CUSTOMER COMPLAINT TICKETS**
In this case study you will create a solution that will help in identifying the type of complaint ticket raised by the customers of a multinational bank.

ELECTIVE 1: DL WITH MLOPS (10 WEEKS)

1 **Cloud Essentials: Intro to AWS**
Understand what is cloud computing, benefits of cloud computing, Different types of cloud providers: Private, public, hybrid. Iaas,Paas, Saas.
Understand Cloud basic essentials services such as EC2, S3, RDS, IAM using management console

2 **WORKING WITH AWS: CASE STUDY**
In this case study you will work on a machine learning task using AWS services

3 **MLOps: INTRODUCTION**
MLOps: DATA LIFECYCLE
MLOps: MODEL LIFECYCLE
Do you think ML ends with just deploying a ML solution? You have to monitor the performance and keep updating the model and its infrastructure from time to time. Learn how to productionise ML model in end to end system in this module.

4 **MLOPS ASSIGNMENT**
In this assignment you will build and run a complete ML pipeline end-to-end

5 **ADVANCED CV**
Apply the concepts learned in Neural Networks to advanced computer vision tasks like Object Detection, Semantic Segmentation using YOLO, SSD, UNet, MaskRCNN.

6 **MLOps + Deployment: DL (Theory)**
MLOps + Deployment: DL (Assignment)
In this case study you will learn how to automate a deep learning task by building an end-to-end machine learning pipeline with Amazon SageMaker Pipelines.

ELECTIVE 2: NLP WITH MLOPS (10 WEEKS)

1 **Cloud Essentials: Intro to AWS**
Understand what is cloud computing, benefits of cloud computing, Different types of cloud providers: Private, public, hybrid. Iaas,Paas, Saas.
Understand Cloud basic essentials services such as EC2, S3, RDS, IAM using management console

2 **WORKING WITH AWS: CASE STUDY**
In this case study you will work on a machine learning task using AWS services

3 **MLOps: INTRODUCTION**
MLOps: DATA LIFECYCLE
MLOps: MODEL LIFECYCLE
Do you think ML ends with just deploying a ML solution? You have to monitor the performance and keep updating the model and its infrastructure from time to time. Learn how to productionise ML model in end to end system in this module..

4 **MLOPS ASSIGNMENT**
In this assignment you will build and run a complete ML pipeline end-to-end

5 **ADVANCED NLP**
This module will introduce you to the evolving world of deep learning for different NLP related applications. and will help you gain a complete understanding of how these complex models work. You will learn how deep learning can be used for solving different NLP related tasks using concepts like attention mechanism and transformers.
Screen reader support enabled.

6 **MLOPS + DEPLOYMENT: NLP (THEORY)**
MLOPS + DEPLOYMENT: NLP (ASSIGNMENT)
In this case study you will learn how to automate a NLP task by building an end-to-end machine learning pipeline with Amazon SageMaker Pipelines.

ELECTIVE 3: AI STRATEGY   (10 WEEKS)

1 **Cloud Essentials: Intro to AWS**
Understand what is cloud computing, benefits of cloud computing, Different types of cloud providers: Private, public, hybrid. Iaas,Paas, Saas.
Understand Cloud basic essentials services such as EC2, S3, RDS, IAM using management console

2 **WORKING WITH AWS: CASE STUDY**
In this case study you will work on a machine learning task using AWS services

3 **MLOps: INTRODUCTION**
MLOps: DATA LIFECYCLE
MLOps: MODEL LIFECYCLE
Do you think ML ends with just deploying a ML solution? You have to monitor the performance and keep updating the model and its infrastructure from time to time. Learn how to productionise ML model in end to end system in this module.

4 **MLOPS ASSIGNMENT**
In this assignment you will build and run a complete ML pipeline end-to-end.

5 **AI STRATEGY FRAMEWORK, STRUCTURED PROBLEM SOLVING/ DATA STORYTELLING**
- Understanding the impact that AI and ML have done to businessnes and identying their challenges and risks in terms of executing an AI strategy
- Understanding the fundamental pillars of an AI strategy like Reimagining products and processes, data, technology, humans etc that will impact the data strategy

6 **MAPPING ML WITH DATA ARCHITECTURE STRATEGY**
- Understand the principles that guide the decision making for developing a data architecture.
- Explore the tools available for building data architecture; different managed services and their open-source counterparts. You will also understand selecting tools that fulfil application requirements.
- Explore commonly used data patterns and their uses.

7 **EXECUTING AI STRATEGY**
Understanding the use of these aspects through real world case studies

8 **AI STRATEGY: ASSIGNMENT**
Identify two KRAs/goals/OKRs for your business that could be meet by leveraging an AI solution.

1 **CAPSTONE (4 WEEKS)**
CAPSTONE
Choose from a range of real-world industry woven projects on advanced topics like Recommendation Systems, Fraud Detection, GANs among many others.

2 **NEWS RECOMMENDER SYSTEM**
Build a model to using the concepts of natural language processing and recommender systems to recommend news stories to users on a popular news platform.

3 **CREDIT CARD FRAUD DETECTION**
To build a machine learning model capable of detecting fraudulent transactions. Here you have to predict fraudulent credit card transactions with the help of machine learning models.

4 **EYE FOR BLIND - (IMAGE CAPTIONING)**
Build a model that can help any visually impaired person in understanding image present before them. It is a deep learning model which can explain the content of an image in the form of speech.

5 **SENTIMENT ANALYSIS BASED PRODUCT RECOMMENDER SYSTEM**
Build a sentiment analysis based product recommendation system to recommend the similar products to the users. Sentiment analysis is used to fine tune the product recommendation system.

6 **SALES FORECASTING**
Predict the sales for a european pharma giant using a host of different types of variables. Apply VAR and VARMAX models to build the appropriate model
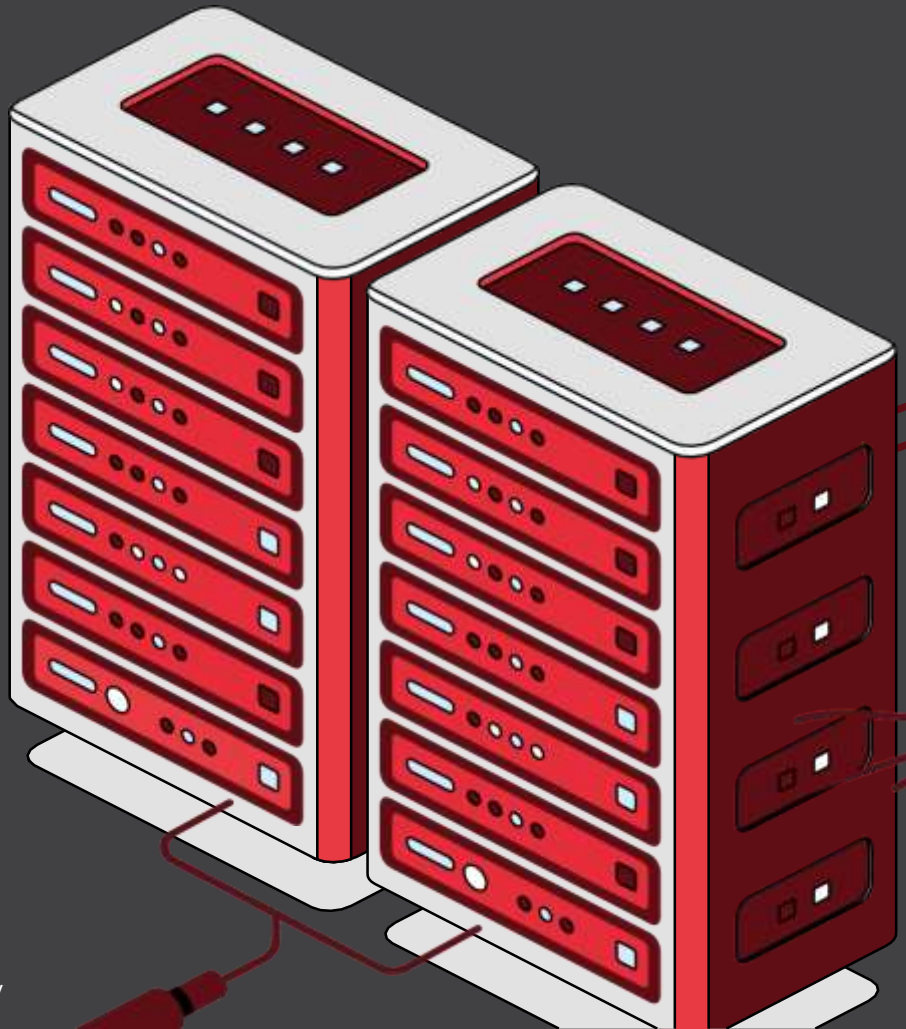
7 **STYLE TRANSFER USING GAN'S**
Build a Model for converting MRI images from one type (T1) into other (T2) and vice versa. CycleGAN model is used for producing T2 type MRI images given T1type input MRI images.

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REINFORCEMENT LEARNING (OPTIONAL)

1 **CLASSICAL REINFORCEMENT LEARNING**
Ever wondered how Alpha Go beat the best GO player or how Boston Dynamics made robots that can run. Start your journey with the classical RL algorithms like dynamic programming, Monte Carlo methods, Q Learning to train the state value and action value functions of the policy.

2 **ASSIGNMENT - CLASSICAL REINFORCEMENT LEARNING**
Train an agent that'll beat you in the game of numerical tic-tac-toe everytime you play

3 **DEEP REINFORCEMENT LEARNING**
Want to build your own Atari Game? Learn the Q-function or policy using the various Deep Reinforcement Learning algorithms: Deep Q Learning, Policy Gradient Methods, Actor- Critic method.

4 **REINFORCEMENT LEARNING PROJECT**
Improve the recommendation of the the rides to the cab drivers by creating a RL based algorithm using vanilla Deep Q-Learning (DQN) to maximize the driver's profits and inturn help in retention of the driver on the cab aggregator service.

Disclaimer: Program curriculum is subject to change basis inputs from the institute and experts. Please refer to the website for update details, or speak to our Admission Counsellors.

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Meet the
Class

**INDUSTRIES
OUR LEARNERS COME FROM**

20.9% BFSI

7.5% Healthcare

5% Retail

3.1% Consulting

3.5% Manufacturing

3.7% Automobile

3.9% Energy

1.9% Logistics & Supply Chain

1.9% Media

5.2% E-Commerce

4.1% Education

1.7% Aerospace

1.7% Security

1.7% Transport

5.6% Telecom

3.7% Others

25.1% IT
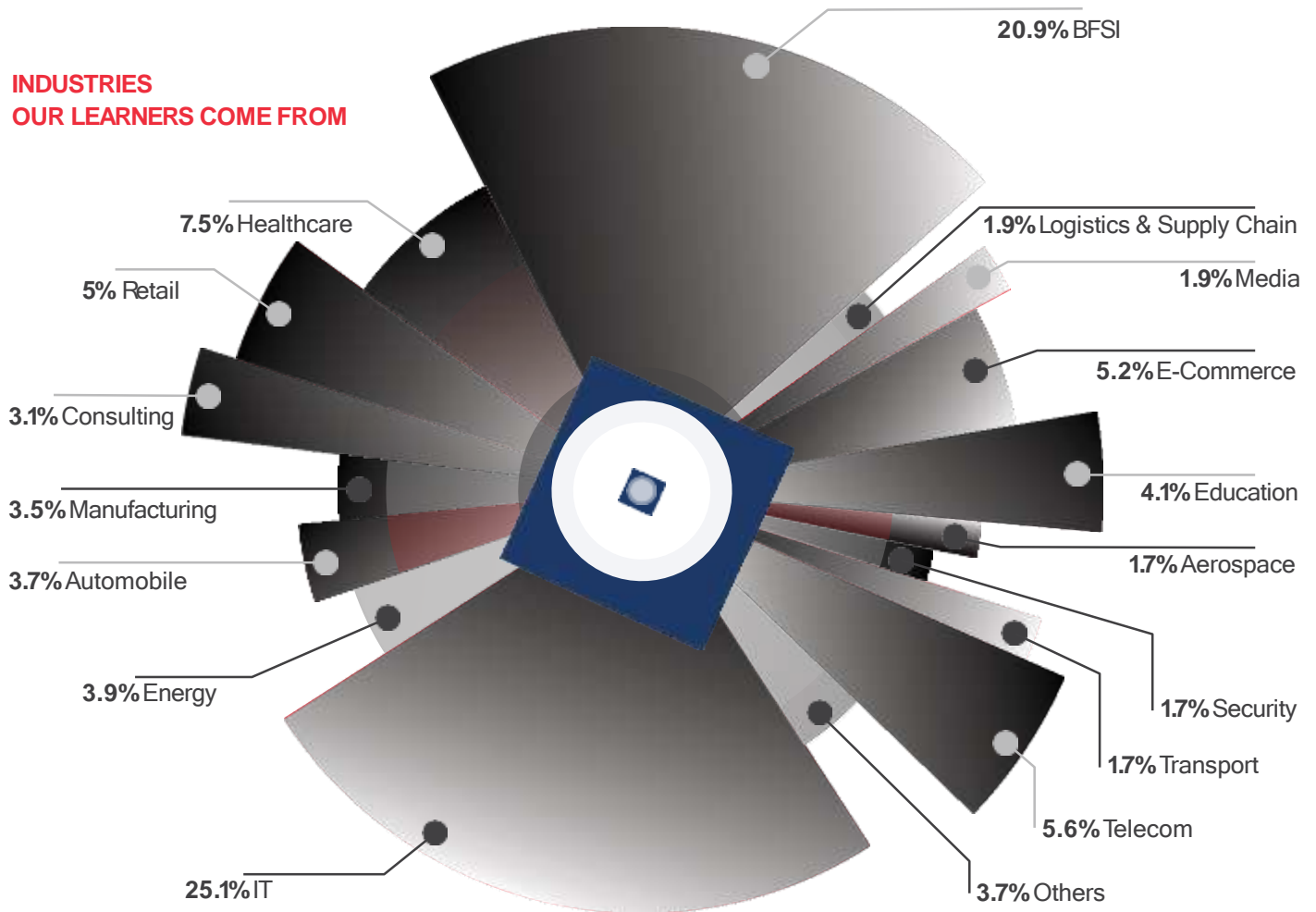
**WORK EXPERIENCE RANGE
OF OUR LEARNERS**

15% 6.1-9 years

11% 9.1-12 years

21% 3.1-6 years

33% 0-3 years

20% 12.1+ years
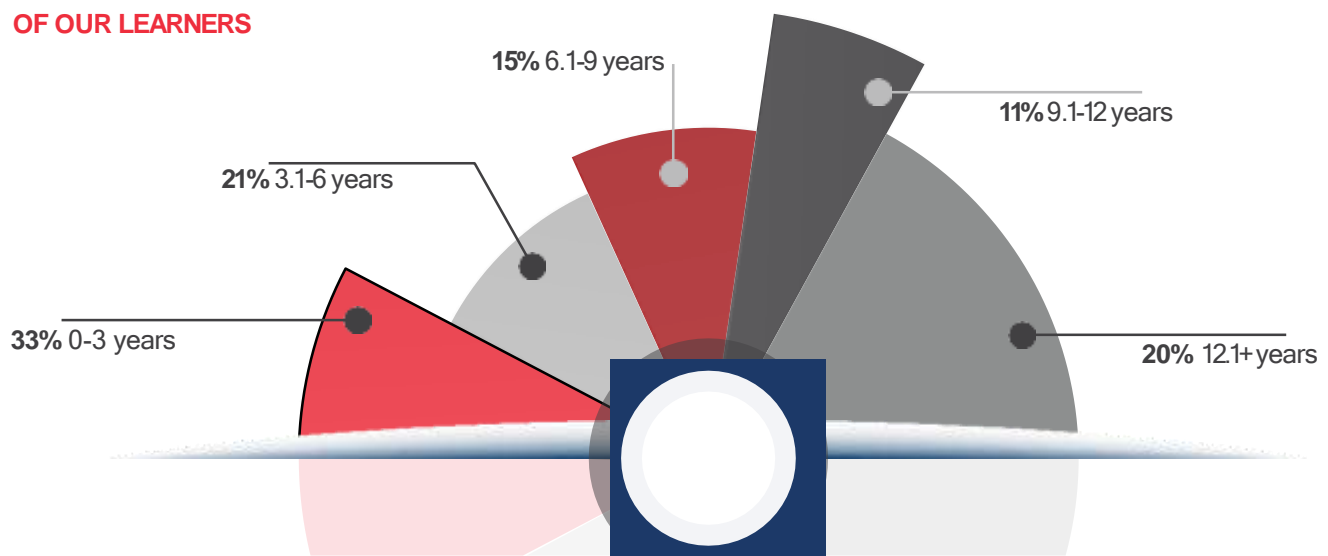
Career Support

Jobs on Career Centre

Career Centre offering CIMN jobs across experience levels and CTC ranges.
- Easy apply feature for CIMN hiring partner vacancies
- Create resume at profile builder and with one click to apply for various jobs

CIMN Elevate

- Recruitment Drive to connect you with the best talent admirers in the industry
- Get access to a wide range of opportunities and find the perfect job
- Apply your learnings to real industry problems

Interview Preparation

Pre-recorded content on topics such as:
- Profile building, communications, etc
- Problem solving approach
- Approaching guesstimates
- Domain specific interview question bank and much more

Profile Builder (AI-Powered)

An easy to use Resume, LinkedIn and Cover Letter preparation tool.
- Resume Score: AI-Driven Resume Score
- Real time recommendations to improve
- Match your resume to the JD and check fitment
- LinkedIn Profile Review
- Cover Letter Creation

Just In Time Interview Prep (JIT)

For upcoming job interviews, JITs are conducted within 48 hours for eligible programs.
- Tailored to job role and target domain
- Real time feedback and tips for improvement

High Performance Coaching

Dedicated coaches working with you to identify best suited career opportunities.
- Help you define your value proposition
- Lay out a Career Path and help you adhere to your timelines and goals
- Help you with interview preparations, finding jobs in the market, salary negotiations and other preparation as required

Personalised Industry Session

90-minute sessions over the weekend by leading industry experts.
- Session categories: Career, Technical and Communications
- Doubt resolution
- Develop proof of concepts and apply theoretical concepts in the real world
- Assess skill levels
- Peer Networking
- Classroom Element
- Business communication sessions and much more

Career Mentorship Sessions

Get personalised career advice through 1-1 sessions with industry experts.
- Goal setting for better employment results

Live Profile Building Workshops

Have live sessions on how to build your profile-be it your resume or GitHub. With hands-on sessions on Git and Github, you can boost your profile and also include your work from Kaggle & OpenCV.

Disclaimer: Career services are subject to change. Please refer to the website or speak to our Admission Counsellor for updated details.

Program Details and
Admission Process

PROGRAM DURATION AND FORMAT
13 Months | Online

PROGRAM FEE
NPR 2,25,000 (Incl. of all taxes)

PROGRAM START DATES
Please refer to the website for program start dates.
www.cim.edu.np

ELIGIBILITY
Bachelor's Degree with 50% or equivalent passing marks. Minimum 1 year of work experience in a technical domain or a degree in mathematics or Statistics with programming experience.

WEEKLY COMMITMENT (15 hours/week)

7-8 HOURS
Asynchronous learning time.

7-8 HOURS
Assignments and projects.

**1 LIVE SESSION**
Every week.

SELECTION PROCESS

STEP 1: Online Eligibility Test
Fill out an application and take a quick 40-minute online test with 18 questions to assess your aptitude. 10 questions from mathematics, aptitude & reasoning & 8 questions from programming.

STEP 2: Review and Shortlisting of Suitable Candidates
Our faculty will review all applications, considering the educational and professional background of an applicant and review the test scores where applicable. Following this, Offer Letters will be rolled out so you are assured a great peer group to learn and network with.
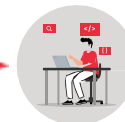
STEP 3: Enrollment for Access to Prep Content
Make a quick block payment with assistance from our loan partners where required, receive immediate access to the prep content and begin your CIMN journey.

FOR FURTHER INFORMATION, CONTACT

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We are available 24*7
✉@ cimnuniversity@gmail.com

Disclaimer: Program fee and payment options are subject to change. Please refer to the website for updated details or speak to our admission counsellor.

Central Institute of Management Nepal