greatlearning
Learning for Life

TEXAS
The University of Texas at Austin

Post Graduate Program in

ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

AI - THE NEXT DIGITAL FRONTIER

60% RISE IN DEMAND

for Artificial Intelligence and Machine Learning experts in 2018*

(Kelly OCG)

40% OF DIGITAL TRANSFORMATION

initiatives will use AI services by 2019 and by 2021, 75% of enterprise applications will use AI*

(IDC report 2018)

$40 BILLION

was spent by companies around the world in developing AI capabilities in 2016*

(McKinsey Global Institute report on Artificial Intelligence)

75%

of Indian companies feel that the shortage of skilled professionals is slowing down their adoption of AI*

(as per Intel/IDC)

#1

AIML PROGRAM

Source: Analytics India Magazine

WHY GREAT LEARNING

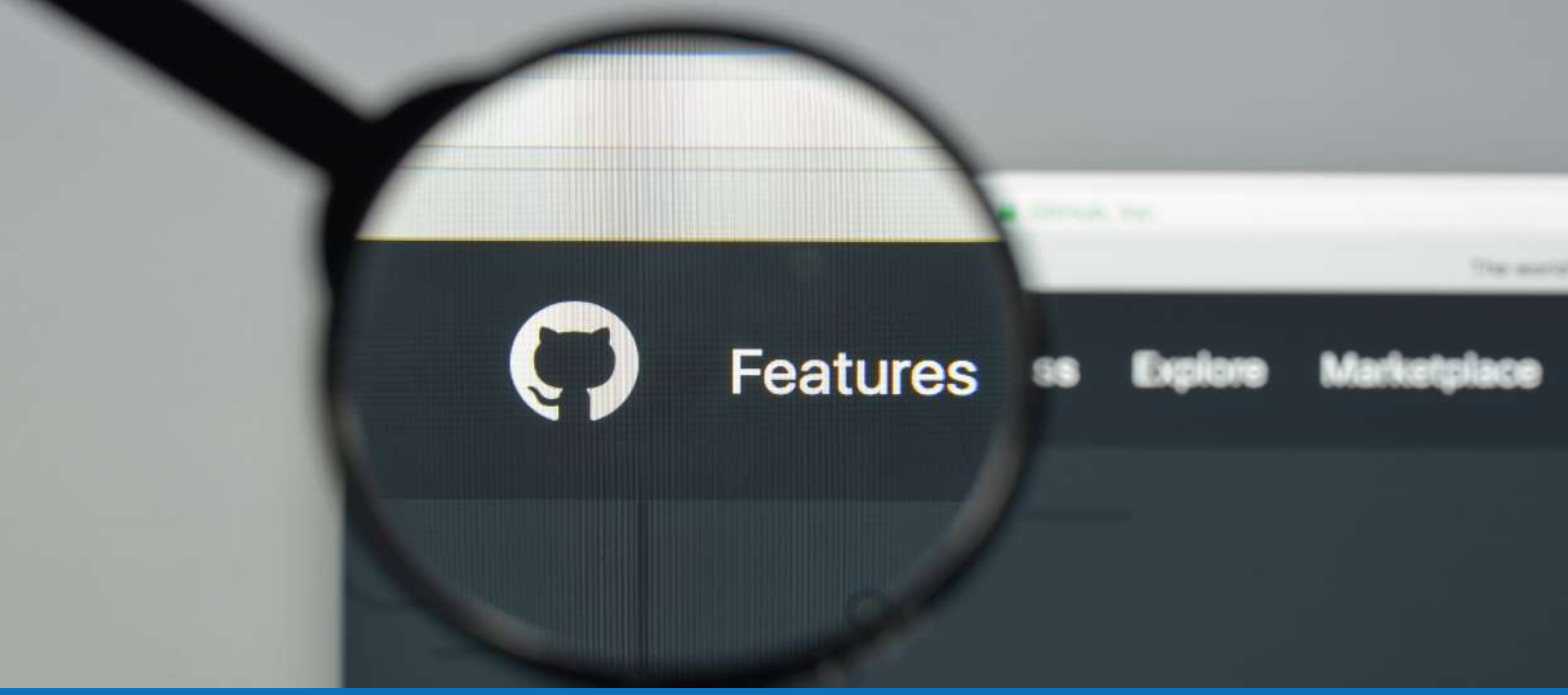
15000+
Students

10 Million+
Hours of Learning Delivered

15+
Top Ranked Programs

1000+
Industry Experts

25+
India's Best Data Science Faculty



WHAT MAKES OUR **AIML PROGRAM UNIQUE?**

- Covers Artificial Intelligence & Machine Learning technologies and applications including Machine Learning, Deep Learning, Computer Vision, Natural Language Processing, Reinforcement Learning, Neural Network, Tensor Flow and many more.
- The program is offered in two formats, a blended format (classroom sessions with online content) & online only (online videos with weekend mentorship sessions)
- Hands-on program using AI and ML lab and 12+ projects. It features case studies and learning from some of the top global companies like Uber, Netflix, Google, Amazon etc.
- For every assignment you work as part of this program, you will get to see the solutions of the assignment as recorded walkthroughs. Recorded walkthroughs help you to understand the concepts better and analyze a problem from the view of an expert.
- As part of this program, you will be making all of your submissions on Github. Github is an online repository which helps you to store all the projects and assignments you have done as part of this program in a single place. Today, most companies look at potential recruits Github profiles to check their technical expertise before hiring them.
- Designed by leading academic and industry experts with IIT-Bombay faculty.

WHAT CAN OUR **AIML PROGRAM HELP YOU ACHIEVE?**

- Develop expertise in popular AI & ML technologies and problem-solving methodologies
- Develop the ability to independently solve business problems using AI & ML
- Learn to use popular AI & ML technologies like Python, Tensorflow and Keras to develop applications
- Develop a verified portfolio with 12+ projects that will showcase the new skills acquired
- Build expertise in AI & ML which are quickly becoming the most sought-after skills around the world

CERTIFICATE

The program is internationally recognized and participants earn dual certificates from The University of Texas at Austin and Great Lakes.

PROGRAM FORMATS:
ONLINE LEARNING

In this format, learning occurs through online videos along with online mentorship sessions every weekend to clear doubts, reinforce concepts and for provide assistance on projects. The mentors come with substantial industry experience which helps learners gain an industry perspective. This guidance plays a critical role in making them industry-ready.

75+
hours of online Mentor and Industry sessions

150+
hours of online learning (self-learning content, reading material, assessments, projects and assignments)

1
Capstone project

12+
hands-on projects

Hackathon
Company sponsored hackathons

12 Months | 225+ hours of learning

CURRICULUM

FOUNDATIONS

Python for AI & ML

- Python Basics
- Python Functions and Packages
- Working with Data Structures,Arrays, Vectors & Data Frames
- Jupyter Notebook – Installation & function
- Pandas, NumPy, Matplotlib, Seaborn

Applied Statistics

- Descriptive Statistics
- Probability & Conditional Probability
- Hypothesis Testing
- Inferential Statistics
- Probability Distributions

MACHINE LEARNING

Supervised learning

- Linear Regression
- Multiple Variable Linear Regression
- Logistic Regression
- Naive Bayes Classifiers
- k-NN Classification
- Support Vector Machines

Unsupervised learning

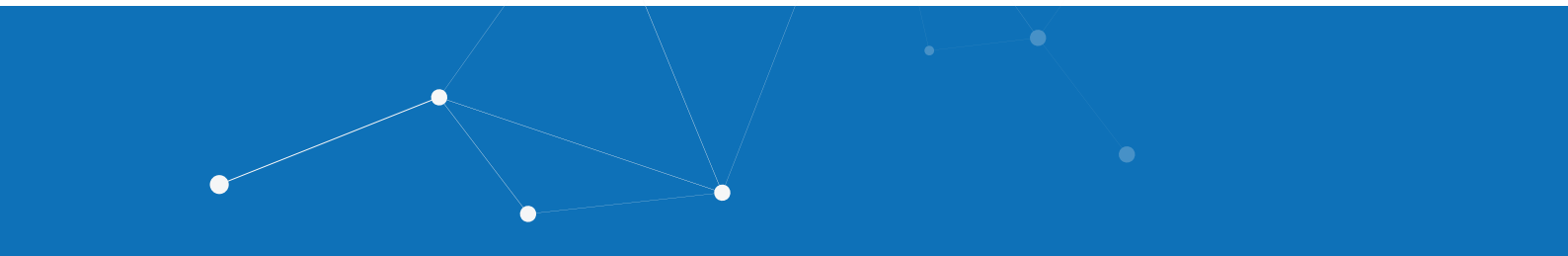
- K-means Clustering
- Hierarchical Clustering
- Dimension Reduction-PCA

Ensemble Techniques

- Decision Trees
- Bagging
- Random Forests
- Boosting

Recommendation Systems

- Introduction to Recommendation Systems
- Popularity based model
- Content based Recommendation System
- Collaborative Filtering (User similarity & Item similarity)
- Hybrid Models



ARTIFICIAL INTELLIGENCE

Introduction to Neural Networks and Deep Learning

- Introduction to Perceptron & Neural Networks
- Activation and Loss functions
- Gradient Descent
- Batch Normalization
- TensorFlow & Keras for Neural Networks
- Hyper Parameter Tuning

Computer vision

- Introduction to Convolutional Neural Networks
- Convolution, Pooling, Padding & its mechanisms
- Forward Propagation & Backpropagation for CNNs
- CNN architectures like AlexNet, VGGNet, InceptionNet & ResNet
- Transfer Learning

NLP Basics(Natural Language Processing)

- Introduction to NLP
- Stop Words
- Tokenization
- Stemming and lemmatization
- Bag of Words Model
- Word Vectorizer
- TF-IDF
- POS Tagging
- Named Entity Recognition

Sequential Models and NLP

- Introduction to Sequential data
- RNNs and its mechanisms
- Vanishing & Exploding gradients in RNNs
- LSTMs - Long short-term memory
- GRUs - Gated recurrent unit
- LSTMs Applications
- Time series analysis
- LSTMs with attention mechanism
- Neural Machine Translation
- Advanced Language Models: Transformers, BERT, XLNet

Advanced Computer Vision

- Object Detection
- YOLO, R-CNN, SSD
- Semantic Segmentation
- U-Net
- Face Recognition using Siamese Networks
- Instance Segmentation

Introduction to GANs (Generative adversarial networks)

- Introduction to GANs
- Generative Networks
- Adversarial Networks
- How GANs work?
- DCGANs - Deep Convolution GANs
- Applications of GANs

Introduction to Reinforcement Learning (RL)

- RL Framework
- Component of RL Framework
- Examples of RL Systems
- Types of RL Systems
- Q-learning

LANGUAGES AND TOOLS

Python	TensorFlow	Scipy
Python ML library Scikit-learn	Pandas	Matplotlib
NLP library NLTK	Numpy	Keras

PROJECTS

Here is a sample set of projects which you will be working as part of this program

Analyze health information to make decisions for insurance business

This project uses Hypothesis Testing and Visualization to leverage customer's health information like smoking habits, BMI, age, and gender for checking statistical evidence to make valuable decisions of insurance business like charges for health insurance.

Predicting the Strength of high-performance concrete

Concrete is the most important material in civil engineering. The concrete compressive strength is a highly nonlinear function of age and ingredients. These ingredients include cement, blast furnace slag, fly ash, water, superplasticizer, coarse aggregate, and fine aggregate.

Diagnosing Parkinson's disease using Random Forests

Parkinson's Disease (PD) is a degenerative neurological disorder marked by decreased dopamine levels in the brain. It manifests itself through a deterioration of movement, including the presence of tremors and stiffness. There is commonly a marked effect on speech, including dysarthria (difficulty articulating sounds), hypophonia (lowered volume), and monotone (reduced pitch range). Additionally, cognitive impairments and changes in mood can occur, and the risk of dementia is increased.

Traditional diagnosis of Parkinson's Disease involves a clinician taking a neurological history of the patient and observing motor skills in various situations. Since there is no definitive laboratory test to diagnose PD, diagnosis is often difficult, particularly in the early stages when motor effects are not yet severe. Monitoring the progression of the disease over time requires repeated clinic visits by the patient. An effective screening process, particularly one that doesn't require a clinic visit, would be beneficial. Since PD patients exhibit characteristic vocal features, voice recordings are a useful and non-invasive tool for diagnosis. If machine-learning algorithms could be applied to a voice recording dataset to accurately diagnosis PD, this would be an effective screening step prior to an appointment with a clinician

Implementing an Image classification neural network to classify Street House View Numbers

Recognizing multi-digit numbers in photographs captured at street level is an important component of modern-day map making. A classic example of a corpus of such street-level photographs is Google's Street View imagery composed of hundreds of millions of geo-located 360-degree panoramic images. The ability to automatically transcribe an address number from a geolocated patch of pixels and associate the transcribed number with a known street address helps pinpoint, with a high degree of accuracy, the location of the building it represents.

More broadly, recognizing numbers in photographs is a problem of interest to the optical character recognition community. While OCR on constrained domains like document processing is well studied, arbitrary multi-character text recognition in photographs is still highly challenging. This difficulty arises due to the wide variability in the visual appearance of text in the wild on account of a large range of fonts, colors, styles, orientations, and character arrangements. The recognition problem is further complicated by environmental factors such as lighting, shadows, secularities, and occlusions as well as by image acquisition factors such as resolution, motion, and focus blur.

Face Mask Prediction using U-Net

Build a deep learning model using U-Net as architecture that will learn the pixel mapping of the face in an image.

We will be using transfer learning. We will use the MobileNet model which is already trained to detect the face attributes. We will need to train the last 6-7 layers and freeze the remaining layers to train the model for predicting the mask on the face. To be able to train the MobileNet model, we will be using the WIDER FACE dataset for various images with a single face and multiple faces.

Sentiment Analysis using LSTM

Word embedding is a type of word representation that allows words with similar meaning to have a similar representation. It is a distributed representation for the text that is perhaps one of the key breakthroughs for the impressive performance of deep learning methods on challenging natural language processing problems. We will use the IMDb dataset to learn word embedding as we train our dataset. This dataset contains 50,000 movie reviews from IMDB, labeled with a sentiment (positive or negative).

The objective of this project is to build a text classification model that analyses the customer's sentiments based on their reviews in the IMDB database. The model uses a complex deep learning model to build an embedding layer followed by a classification algorithm to analyze the sentiment of the customers.

Deep learning (CV/NLP) - Pneumonia Detection & Automatic Ticket Classification

The capstone project is a focused approach to attempt a real-life challenge with the learnings from the program. The AIML capstone problems are classified under the themes of Computer Vision and Natural Language Processing. The Goals of the Projects achieved are tagged here.

- Computer Vision: Pneumonia Detection - Locate the position of inflammation in an image.
- Natural Language Processing: Automatic Ticket Allocation - Build a classifier that can classify the tickets by analysing text

Machine learning - Prediction of the house prices

This project involves using various features variables available in the Innercity house price dataset. Different Machine learning models like Regression, Ensemble techniques were used to analyse and predict the house prices. Also, the grid search algorithm was used to tune different parameters associated with models.

Face Recognition

Recognize, identify, and classify faces within images using CNN and image recognition algorithms. In this hands-on project, the goal is to build a face recognition system, which includes building a face detector to locate the position of a face in an image and a face identification model to recognize whose face it is by matching it to the existing database of faces.

Classifying silhouettes of vehicles

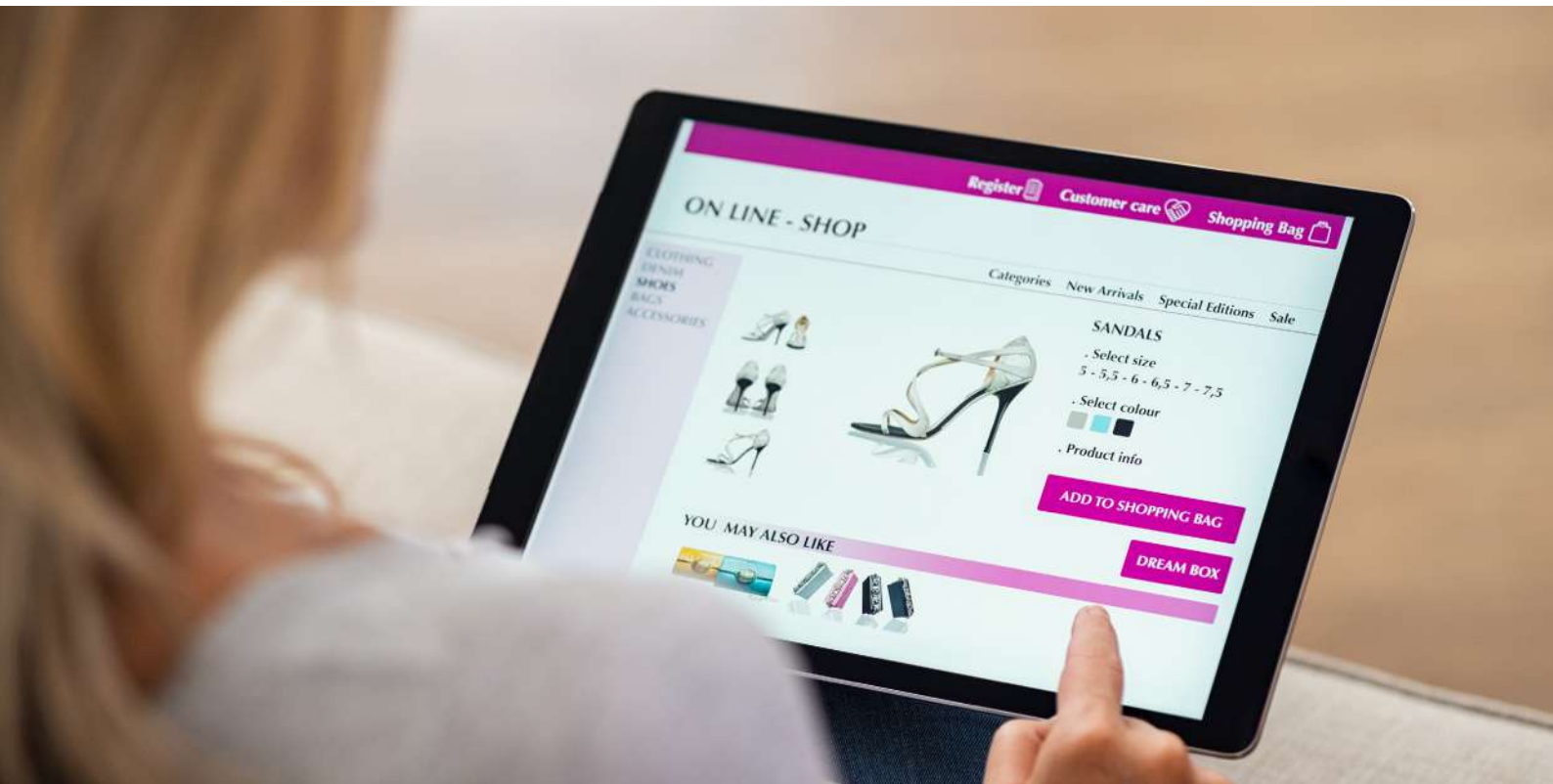
The purpose is to classify a given silhouette as one of three types of vehicles, using a set of features extracted from the silhouette. The vehicle may be viewed from one of many different angles.

Identifying potential customers for loans

This case is about a bank (Thera Bank) whose management wants to explore ways of converting its liability customers to personal loan customers (while retaining them as depositors). A campaign that the bank ran last year for liability customers showed a healthy conversion rate of over 9% success. This has encouraged the retail marketing department to devise campaigns with better target marketing to increase the success ratio with a minimal budget.

Product Recommendation System

Online E-commerce websites like Amazon, Flipkart uses different recommendation models to provide different suggestions to different users. Amazon currently uses item-to-item collaborative filtering, which scales to massive data sets and produces high-quality recommendations in real-time.



FACULTY

DR. KUMAR MUTHURAMAN

H. Timothy (Tim) Harkins Centennial Professor
University of Texas at Austin

PROF. MUKESH RAO

Faculty, Machine Learning
Great Learning

DR. D NARAYANA

Faculty, AI and Machine Learning
Great Learning

PROF. ABHINANDA SARKAR

Academic Director
Great Learning

DR. AMIT SETHI

Faculty
IIT Bombay

DR. ARJUN JAIN

Adjunct Faculty Member, Department of Computational and Data Sciences
IISc

Faculty has contributed to program curriculum and online learning content only

TESTIMONIALS

MANISH KUMAR

Senior Engineer
Tata Consulting Engineers Limited

The program learning experience has been smooth and great. The program is well structured and the learning content provided is up-to-date and covers both theoretical and industrial application aspects. Hands-on exercises and projects at the end of the module are really helpful in gaining confidence.

DHINESH KUMAR GANESHAN

Lead Consultant
Infosys

Great Learning's PGP-AIML Course is an eye-opener on future technologies and opportunities and is led by industry experts who put their efforts into ensuring that the knowledge is shared in the right sense. They try to help students to gain critical information that is important for their career success.

GREAT ALUMNI WORK IN LEADING COMPANIES

ADMISSION DETAILS

Eligibility

Applicants should have a Bachelor's degree with a minimum of 50% aggregate marks or equivalent and familiarity with programming. For candidates who do not know Python, we offer a free pre-program tutorial.

Fee

₹2,40,000 + GST

Payments

Candidates can pay the program fee through

- Net Banking
- Credit Cards or Debit Cards

Financial aid

With our corporate financial partnerships avail education loans at 0% interest rate*.

HDFC CREDILA · zest money · eduvanz Making Education Accessible · LIQUILOANS

Conditions Apply. Please reach out to the admissions team for more details.

Selection Process

1. Interested candidates need to apply by filling a simple online application form
2. The admissions committee and faculty panel will review the application, followed by a screening call to shortlist eligible candidates
3. Offer will be made to selected applicants

Location

The Program is available at

BANGALORE
CHENNAI
GURGAON
HYDERABAD
PUNE
MUMBAI

PROGRAM PARTNERS

TEXAS
The University of Texas at Austin

The University of Texas—Austin is one of the largest schools in USA. It was founded in 1883. Today UT Austin is a world-renowned higher education, research-intensive institution, serving more than 51,000 students annually with a teaching faculty of around 3,000. University of Texas at Austin is ranked #2 worldwide for Business Analytics according to the QS University rankings, #2 for science, technology, engineering and math (STEM) professionals according to Forbes and ranked #8 in Artificial Intelligence by the U.S.News & World Report Rankings 2018.

GREAT LAKES
EXECUTIVE LEARNING

Great Lakes mission is to become a Center of Excellence in fostering managerial leadership and entrepreneurship in the development of human capital through quality research, teaching, residential learning and professional management services.

greatlearning
Learning for Life

Great Learning's mission is to enable career success in the Digital Economy. It's programs always focus on the next frontier of growth in industry and currently straddle across Analytics, Data Science, Big Data, Machine Learning, Artificial Intelligence, Deep Learning, Cloud Computing and more. Great Learning uses technology, high-quality content, and industry collaboration to deliver an immersive learning experience that helps candidates learn, apply, and demonstrate their competencies. All programs are offered in collaboration with leading global universities and are taken by thousands of professionals every year to secure and grow their careers.

Learn more *about the program*

+91-8448480528

aiml@greatlearning.in

greatlearning.in