IIT Guwahati

The IoT Academy
Connecting The Unconnected

CAPSTONE PROJECTS

Advanced Certification in

Applied Data Science, Machine Learning & IoT

By **The IoT Academy** in Collaboration with India's Top Institute

ABOUT THE
IIT GUWAHATI

Indian Institute of Technology Guwahati, the sixth member of the IIT fraternity, was established in 1994. The academic programme of IIT Guwahati commenced in 1995.At present the Institute has eleven departments and three inter-disciplinary academic centres covering all the major engineering, science and humanities disciplines, offering BTech, BDes, MA, MDes, MTech, MSc and PhD programmes. Within a short period of time, IIT Guwahati has been able to build up world class infrastructure and a reputation for itself.

ABOUT
E&ICT ACADEMY, IIT GUWAHATI

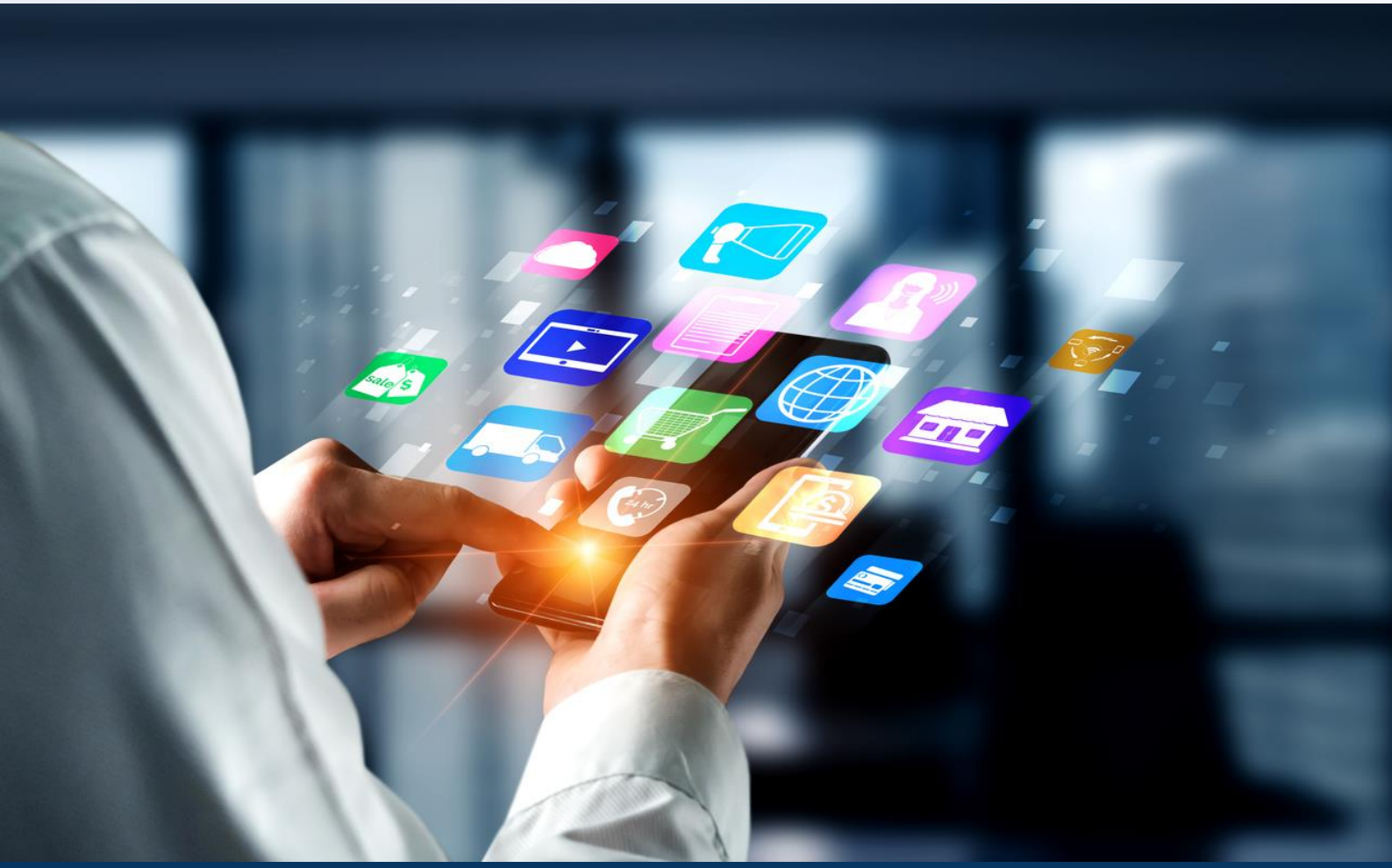
E&ICT Academy is joint venture between IIT Guwahati and MeiTY (The Ministry of Electronics and Information Technology, Government of India).

E&ICT Academy, IIT Guwahati conducts specialized customized training programmes and research promotion workshops for corporate sector & educational institutions

CAPSTONE & LIVE SESSION PROJECTS

The projects and assignments will help you accumulate real-world experience in different industries.

- Automotive Industry
- Education Industry
- Banking Sector
- Entertainment Industry
- Healthcare Industry
- Manufacturing Segment
- Retail Industry
- Production industry
- Finance Sector



CAPSTONE PROJECTS

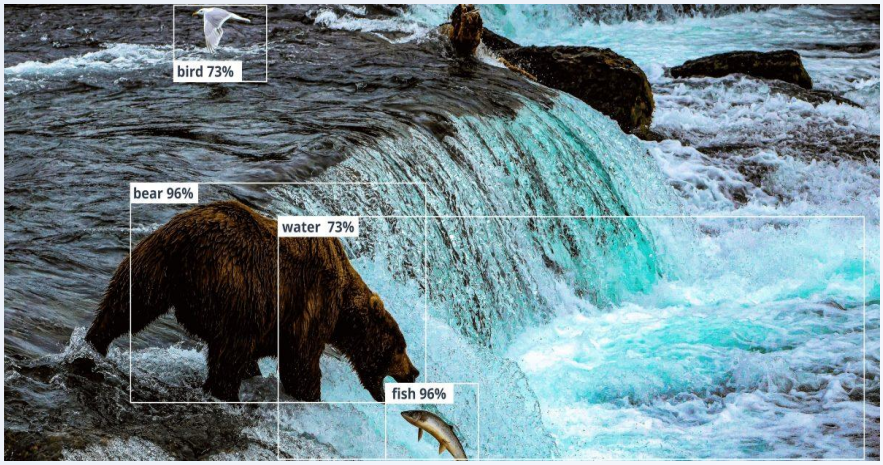
Industry projects will be a part of your Advanced Certification Program in **Machine Learning and IoT** to consolidate your learning. Industry projects will ensure you have the real-world experience to start your career in ML-IOT.

- 10+ Essential Tools
- Designed by Industry Experts
- Get Real-world Experience

Auto Image Captioning

Automatic image captioning is widely used by search engines to retrieve and show relevant search results to the users. For example - to categorize personal multimedia collections, for automatic product tagging in online catalogs, and other areas of business and researches. Use CNN and LSTM to create a model that can automatically add captions to the image.

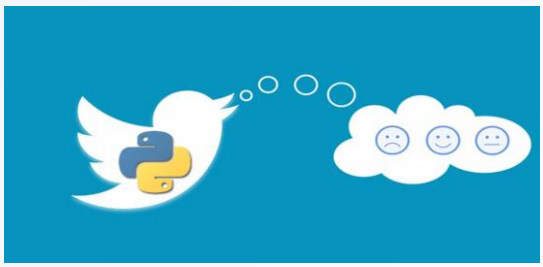
Tools you will be using: OpenCV, Tensorflow 2/ Keras, Numpy, Pandas, Matplotlib



Twitter Sentiment Analysis using Tweepy

Analyzing the tweets helps us in understanding the thoughts and sentiments of people over any popular topic. It helps us to understand what people are thinking about the trend. Here, as a part of this project, you will use Tweepy, Textblob, nltk, and other NLP libraries to analyze the sentiments from the Trending Twitter's tags.

Tools you will be using: Tweepy, Textblob, NLTK



Building a RASA Based Chatbot

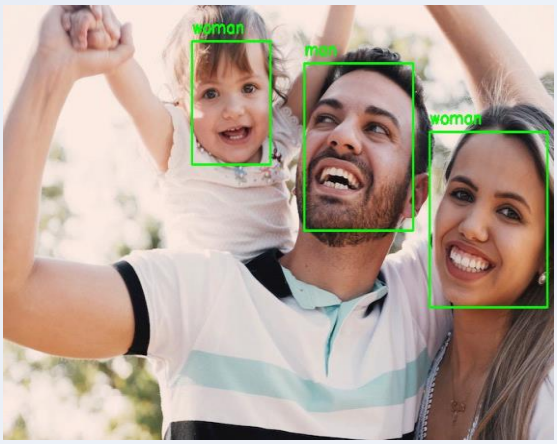
Rasa is a framework for developing AI-powered, industrial grade, powerful chatbots. The developers use it to create intent-based chatbots. In this project, we are going to understand some of the most important basic aspects of the Rasa framework and use RASA NLU and RASA CORE to build a conversational chatbot.

Tools you will be using: RASA NLU, RASA Core

Real-Time Age, Emotion and Gender Detection using CNN

Use CNN and OpenCV to create a model which would detect the person's age, emotion, and age in real-time.

Tools you will be using: OpenCV, Tensorflow 2/ Keras, Numpy, Pandas, Matplotlib



Resort Menu Prediction

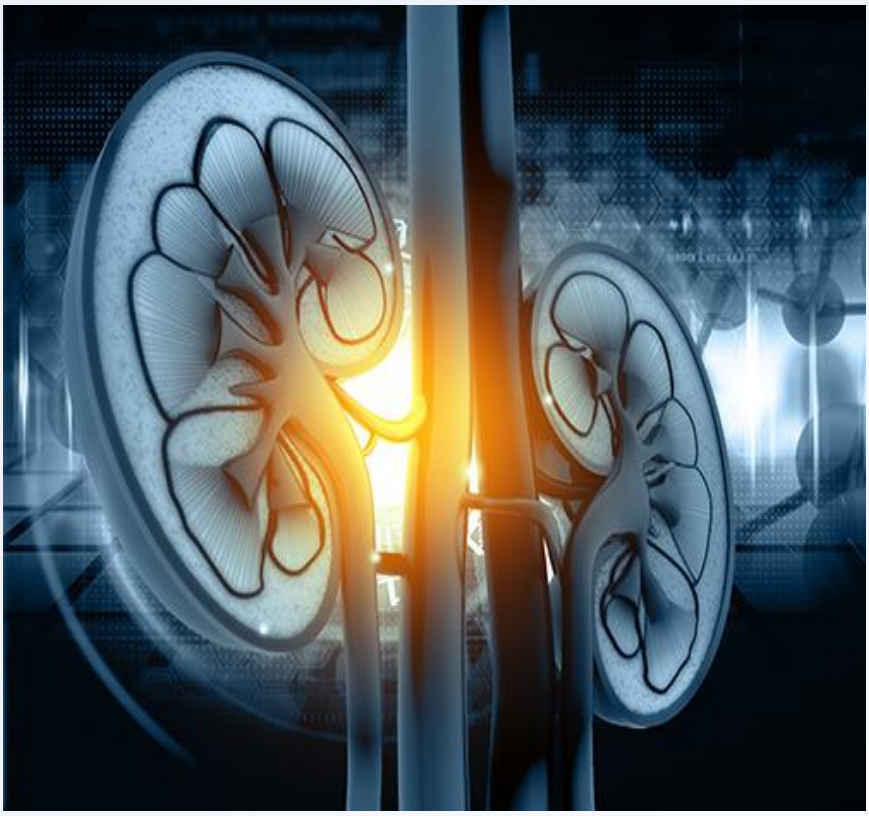
Emerald Oyster is affected by the high cost of meals at multiple restaurants within the resort. To resolve this issue, they need a new menu and choices based on the economical condition of the customer. Your task will be to identify the economic class of the customer based on the data collected so that the board can resolve this with proper remodeling.

Tools you will be using: Pandas, SKLearn, Matplotlib, Seaborn, Numpy

Telecom Churn Prediction

A telecom company wants you to analyze its data, to keep its customers. You will be provided with the 'Telecom Churn' dataset. Use it to create a model to predict which customer will switch to other telecom service providers, based on the relevant customer data.

Tools you will be using: Pandas, Numpy,, Seaborn, Matplotlib, SKLearn



Chronic Kidney Disease Prediction

Chronic kidney disease (CKD) is a covert disease. Accurate prediction of CKD progression overtime is necessary for reducing its costs and mortality rates. The dataset is taken over a 2-month period in India. It has 400 rows with 26 features like red blood cells, pedal edema, sugar, etc. Use this to classify whether a patient has chronic kidney disease.

Tools you will be using: Pandas, SKLearn

Gnar Automobiles

Gnar Automobiles engages in the distribution and sale of automobiles and light commercial vehicles. The owner of the Gnar Automobiles deals with a number of distributors across countries in different origins. As every origin sends cars with various specifications. The owner wants to determine the origin of the cars based on the specifications of the cars to further increase business opportunities

Tools you will be using: Pandas, Matplotlib, Numpy, mlxtend

Big Mart - Customer Segmentation

The data scientists at Big Mart have collected 2013 sales data of 1559 products across 10 stores in different cities. Big Mart CEO wants to understand the customer demographics and customer retention (Customer who can converge easily) so that the marketing team can market their products and services by conducting various strategies accordingly.

Tools you will be using: Pandas, scipy, Numpy

Credit Score Prediction

Sydney based Caltech bank plans a new loan scheme for its customers and wants to analyze its customer data to find out how the customer's earning is associated with their credit score. Use clustering methods to find the high credit score clusters of customers. It will summarize the existing loan scheme and help Caltech bank to decide about the new loan scheme.

Tools you will be using: Pandas, scipy, Numpy

Forecast Air Passenger Traffic

An Airline called Star Air has the data of its passengers across months. The data is classified in date/time and the passengers travelling per month. Build a model to forecast the demand (passenger traffic) in Airplanes. You will learn to use Pandas, Scipy, Numpy with hands-on experience of other tools, features and libraries.

Tools you will be using: Pandas, scipy, Numpy

Housing Price Prediction

The dataset is collected from the 1990 California census containing data of one row per census group. The dataset has various demographics and details captured. Based on this data, we have to create a model using Pandas, Scipy, Numpy that can determine the housing price of the house based on the details provided.

Tools you will be using: Pandas, scipy, Numpy

Traffic Sign Classification using CNN in Tensorflow 2.0

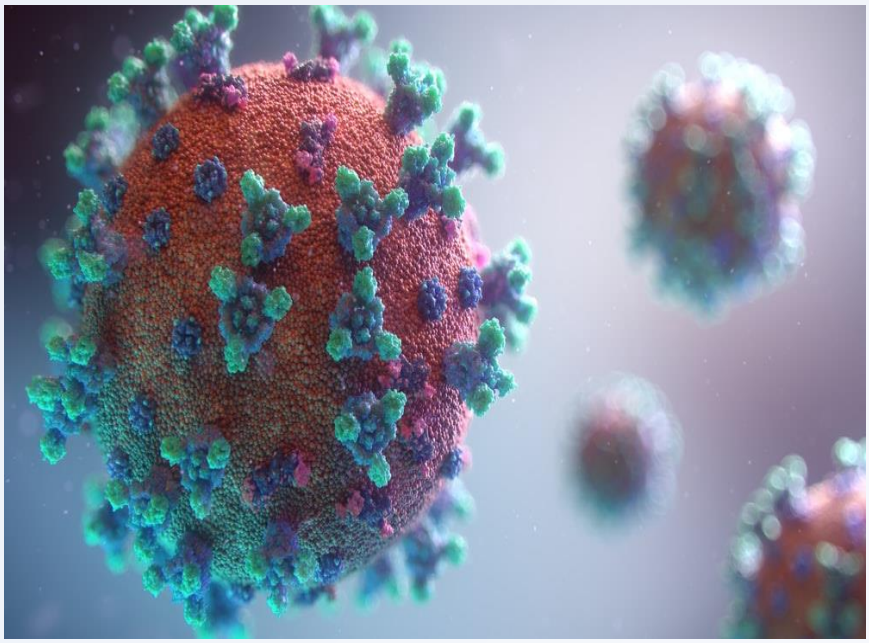
Detection and recognition of traffic signs are crucial for the development of self-driving cars, which have a direct impact on driving behaviors. You will learn to build a CNN model using OpenCV, TensorFlow 2, Keras, Numpy, Pandas, Matplotlib to detect and classify the traffic signals for new self-driving cars.

Tools you will be using: OpenCV, Tensorflow 2/ Keras, Numpy, Pandas, Matplotlib

Smart Surveillance System

A shopping centre needs a surveillance system to detect persons and other items. As a machine learning engineer, you will create a model to detect objects using a pre-trained MaskRCNN model. You will be using OpenCV, Tensorflow 2, Keras, Numpy, Pandas, Matplotlib and others.

Tools you will be using: OpenCV, Tensorflow 2/ Keras, Numpy, Pandas, Matplotlib



COVID Analysis in India

COVID-19 pandemic is the greatest global humanitarian challenge the world has faced since World War II. The pandemic has spread widely, and the number of cases is rising daily. The government is working to slow down its spread. Web Scrape the data from the official government website and find various insights by comparing the trend of COVID in India as compared to the world.

Tools you will be using: Prophet, ARIMA, Pandas, SKLearn, pyplot, Seaborn, Matplotlib, beautifulsoup

Analyze & Visualize Employee Attrition

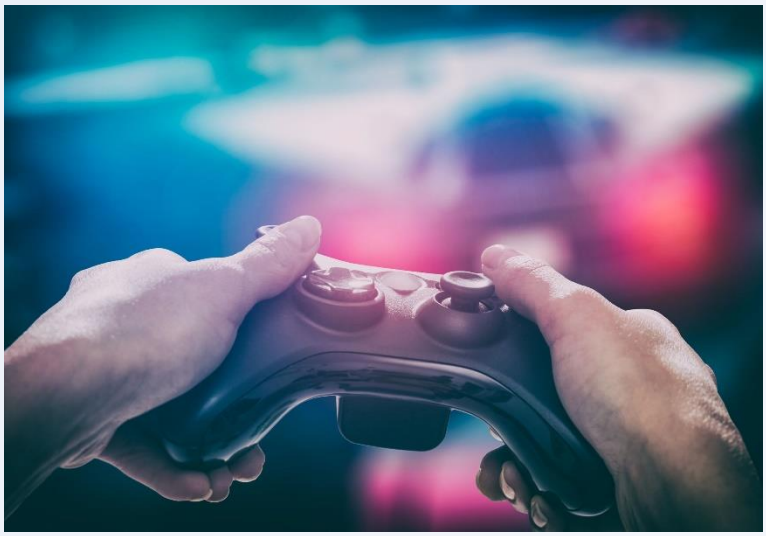
Employee retention is one of the biggest metrics that a company should have in mind when thinking of growth. Employee attrition is caused when the total strength of the company is greatly reduced as more employees leave the company than expected. Uncover the factors that lead to employee attrition and explore the reasons as to why people are leaving the organization and predict whether an employee will leave the organization or not by creating a Web App using Streamlit that takes inputs from user's online.

Tools you will be using: Sklearn, PyCaret, Streamlit, SHAP, Pandas-Profiling

Analyze & Visualize Video Games Sales

SRS Ltd. is a Korean and video game company headquartered in Seoul. You as a Data Scientist is required to analyze the trend in Global Sales according to the Genres on the Video Games Sales Dataset from 1980 & visualize the change in Net Sales of different publishers from the year 2005 to 2015

Tools you will be using: Plotly Express, Streamlit



Identify fraudulent credit card transactions

Credit card fraud happens when a fraudster or a thief steals your credit card or the information from that card to make unauthorized purchases in your name or take out cash advances using your account. Credit card companies such as Citibank, HSBC, and American Express need to recognize fraudulent credit card transactions so that customers are not charged for items that they did not purchase.

Tools you will be using: Sklearn, PyCaret, Streamlit, ELI5, Pandas-Profiling

Beer Consumption Prediction

Beer is the most consumed drink in the world. Not without reason, it is perfect for almost every situation, from happy hour to large wedding parties. You will be given a data sample collected in São Paulo, Brazil. Use this to predict the quantity of beer consumption based on the features that contain climate conditions of a given day.

Tools you will be using: Pandas, Seaborn, SKLearn

Industry 4.0

Automation such as split decisons based on real time data.

Tools you will be using:
ETHERNET,Modbus,wifi,ble,arm,nodemcu,rs485,aws,nodered.

Smart Healtcare

Use of technology to device-to-data centric solutions in healthcare

Tools you will be using:
ARM,ARDUINO,Bluetooth,Sensors,wifi, Node Red

Smart Farming

Monitoring crop filed through sensors and automation

Tools you will be using: LoraWan,ARM,Soil sensor,Moisture sensor,Cellular IOT,Temperature and humidity sensor

Smart Grids

Use of smart grids for energy efficiency on a real-time basis.

Tools you will be using:
DLMS,LORAwan,Bluetooth,4g,Arm,node mcu,google cloud,aws

Predictive Maintenance

To monitor, optimize & maintenance of assets on a real-time basis

Tools you will be using:
Acellerometer,arm,nodemcu,Edge impulse,Neural network,IBM Watson,wifi

Condition Monitoring

Help in reducing damage and maintenance costs with IoT solutions

Tools you will be using: Current sensing,wifi,ble,xbee,lorawan,nodered,aws

Smart Building Automation

Simplifying tasks such as control building, security, temperature, etc via devices.

Tools you will be using:
Bacnet,Modbus,Ethernet,arm,nodemcu,nodered,ibm bluemix

Enviroment Monitoring

Remote environment monitoring connected virtually via different devices

Tools you will be using:PM2.5 sensor,air quality sensor,ARM,ble mesh,lorawan,nbiot,

Waste management

Reduces fuel consumption while dumping waste in the city

Tools you will be using:wifi,nbiot,ph sensor ,moisture sensor ,gas sensor.

Connected SupplyChain

Easier to track where goods are stored

Tools you will be using: temperature and humidity sensor,accelerometer ,lte,nbiot,gps,gas sensor,pressure sensor

Smart Logistics

Increase in the real-time decision-making process in supply chain management

Tools you will be using: Nbiot,GPS,gas sensor,vibration sensor,ARM,Arduino

CONTACT DETAILS

Program Information:

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