

Industry Internship in AI, ML & IIoT

Jointly offered by National Instruments & Cognibot

Course Contents

Introduction to Artificial intelligence

- What is Artificial Intelligence
- Applications of AI

Environment

- Jupyter Notebooks
- Basics of Linux terminal
- GPU computing

Python

- Introduction to python
- Basic data structures and syntax
- Interpreter, loops, functions and modules
- Object Oriented Programming in Python
- Introduction to Numpy, Matplotlib and Pandas libraries
- Project 1

Types of Machine Learning and data types

- Supervised learning
- Unsupervised Learning
- Semi-supervised Learning
- Reinforcement Learning
- Quantitative and Qualitative data types

Metrics and model analysis

- Confusion matrix
- Sensitivity, Specificity etc
- Mean Average Error, Root Mean Square Error etc
- Bias - Variance tradeoff

Linear regression

- R^2 Statistic
- Multiple Linear Regression
- ANOVA
- Collinearity
- Project 2

Random Forest

- Decision Trees
- Bagging, boosting
- Pruning
- Competition 1

Neural Networks

- Introduction to Neural Networks
- Gradient Descent
- Training and inference
- Activation functions
- Convolutional Neural Networks
- Project 3

NLP basics

- Cleaning and tokenization
- Word Embeddings
- Classification (eg. Sentiment Analysis)

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- LSTM
- Project 4

Industrial IoT

- Programming in LabVIEW
- Sensors & Actuators
- Data Acquisition
- Project 5

Next steps and further learning

- Guidance for further learning