# Artificial Intelligence Course

## Learning objectives

Becoming an Artificial Intelligence Engineer puts you on the path to an exciting, evolving career that is predicted to grow sharply into 2020 and beyond. Artificial intelligence will impact all segments of daily life by 2025, with applications in a wide range of industries such as healthcare, transportation, insurance, transport and logistics, and even customer service.

## AI market

The New York Times reports a candidate shortage for certified AI Engineers, with fewer than 10,000 qualified people in the world to fill these jobs, which according to that, an average salary of $172,000 per year in the U.S. for engineers with the required skills.

## Skills you will learn

● Design and build your own intelligent agents and apply them to create practical machine learning models, logic constraint satisfaction problems, knowledge-based systems, probabilistic models.
● Understand and master the concepts and principles of machine learning, including its mathematical and heuristic aspects.
● Implement deep learning algorithms in Keras backend with TensorFlow.
● Understand neural networks, empowering you to analyze and utilize data in a better way.
● Master advanced topics such as convolutional neural networks, recurrent neural networks, training deep networks, and high-level interfaces
● Learn about major applications of Artificial Intelligence across various use cases in various fields like customer service, financial services, healthcare, etc
● Ability to apply Artificial Intelligence techniques for problem-solving and explain the limitations of current Artificial Intelligence techniques

# Curriculum

## FOUNDATIONS OF AI:

- Python for AI (Significant Functions, Packages, and Routines)
- Statistics & Probability (Descriptive & Inferential Stats, Probability & Conditional Prob)
- Visualization principles and techniques
- Linear algebra
- Calculus

## MACHINE LEARNING: SUPERVISED LEARNING:

- Regression (Linear, Multiple, Logistic)
- Classification (k-NN, naïve Bayes, SVM) techniques
- Decision Trees

## MACHINE LEARNING: UNSUPERVISED LEARNING:

- Clustering (k-means, hierarchical, high-dimensional)
- Expectation Maximization

## MACHINE LEARNING: ENSEMBLE METHOD:

- Boosting and Bagging
- Random Forests

## MACHINE LEARNING: ASSOCIATIVE LEARNING:

- Apriori
- Eclat

## NATURAL LANGUAGE PROCESSING:

- Statistical NLP and text similarity
- Syntax and Parsing techniques
- Text Summarization Techniques
- Semantics and Generation
- Topic Modeling (LDA, TF-IDF)

## Misc Topics:

- hyperparameter tuning
- preprocessing methodology
- elbow method for clustering
- AI architecture for generic application flow
- Time series analysis

## COMPUTER VISION:

- Convolutional Neural Networks
- Keras library for deep learning in Python
- Pre-processing Image Data
- Object & face recognition using techniques above

## DEEP LEARNING:

- Neural Network Basics
- Deep Neural Networks
- Recurrent Neural Networks (RNN) (LSTM, GRU, DCN, DMN, Bi-DAF)
- Deep Learning applied to Images using CNN
- Tensor Flow for Neural Networks & Deep Learning
- Poem generator

**Tools Covered**


NumPy


SciPy


pandas

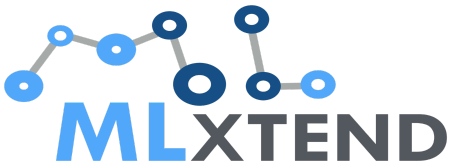
gensim

python™

matplotlib

machine learning in Python


Keras





TensorFlow