هوش مصنوعی با پایتون

Supervised and Unsupervised Learning with Python

- Artificial Intelligence and Its Need
- Applications and Branches of AI
- Defining Intelligence Using Turing Test
- Making Machines Think Like Humans
- General Problem Solver
- Building an Intelligent Agent
- Installing Python 3 and Packages
- Loading Data
- Supervised Versus Unsupervised Learning
- What is Classification?
- Preprocessing Data
- Label Encoding
- Logistic Regression and Naïve Bayes Classifier
- Confusion Matrix
- Support Vector Machines
- Classifying Income Data
- What is Regression?
- Building a Single and Multivariable Regressor
- Estimating Housing Prices
- What is Ensemble Learning?
- What Are Decision Trees
- What are Random and Extremely Random Forests?
- Dealing with Class Imbalance
- Finding Optimal Training Parameters
- Computing Relative Feature Importance
- Predicting Traffic
- Clustering Data with K-Means Algorithm
- Estimating the Number of Clusters
- Estimating the Quality of Clustering
- Building a Classifier
- Segmenting the Market
- Creating a Training Pipeline
- Extracting the Nearest Neighbors
- Building a K-Nearest Neighbors Classifier

- Computing similarity scores
- Finding Similar Users
- Building a Movie Recommendation System

Artificial Intelligence with Python – Sequence Learning

- Introduction and Installation of Packages
- Tokenizing Text Data
- Converting Words to Their Base Forms
- Dividing Text Data into Chunks
- Extracting the Frequency of Terms Using a Bag of Words Model
- Building a Category Predictor
- Constructing a Gender Identifier
- Building a Sentiment Analyzer
- Topic Modeling Using Latent Dirichlet Allocation
- Understanding Sequential Data
- Handling Time-Series Data with Pandas
- Slicing Time-Series Data
- Operating on Time-Series Data
- Extracting Statistics from Time-Series Data
- Generating Data Using Hidden Markov Models
- Identifying Alphabet Sequences with Conditional Random Fields
- Stock Market Analysis
- Working with Speech Signals
- Visualizing Audio Signals
- Transforming Audio Signals to the Frequency Domain
- Generating Audio Signals
- Synthesizing Tones to Generate Music
- Extracting Speech Features
- Recognizing Spoken Word

Artificial Intelligence with Python – Heuristic Search

- Understanding Logic Programming
- Installing Python Packages
- Matching Mathematical Expressions
- Validating Primes
- Parsing a Family Tree

- Analyzing Geography
- Building a Puzzle Solver
- Understanding Heuristic Search
- Constraint Satisfaction Problems
- Local Search Techniques
- Simulated Annealing
- Constructing a String Using Greedy Search
- Solving a Problem with Constraints
- Solving the Region-Coloring Problem
- Building an 8-puzzle solver
- Building a Maze Solver
- Understanding Evolutionary and Genetic Algorithms
- Generating a Bit Pattern with Predefined Parameters
- Visualizing the Evolution
- Solving the Symbol Regression Problem
- Building an Intelligent Robot Controller
- Using Search Algorithms in Games
- Minimax, Alpha-Beta Pruning and Negamax
- Installing easyAI Library
- Building a Bot to Play Last Coin Standing
- Building a bot to play Tic-Tac-Toe
- Building Two Bots to Play Connect Four Against Each Other
- Building Two Bots to Play Hexapawn Against Each Other

Artificial Intelligence with Python – Deep Neural Networks

- Installing OpenCV
- Frame Differencing
- Tracking Objects Using Colorspaces
- Object Tracking Using Background Subtraction
- Building an Object Tracker Using the CAMShift Algorithm
- Optical Flow Based Tracking
- Face Detection and Tracking
- Introduction to Artificial Neural Networks
- Building a Perceptron Based Classifier
- Constructing Single and Multilayer Neural Networks
- Building a Vector Quantizer
- Analyzing Sequential Data Using Recurrent Neural Networks
- Visualizing Characters in an Optical Character Recognition Database

- Building an Optical Character Recognition Engine
- What Is Reinforcement Learning?
- Creating an Environment
- Building a Learning Agent
- What are Convolutional Neural Networks?
- Building a Perceptron-Based Linear Regressor
- Building an Image Classifier Using a Single Layer Neural Network
- Building an Image Classifier Using a Convolutional Neural Network

Python Artificial Intelligence Projects for Beginners

- Classification Overview and Evaluation Techniques
- Decision Trees
- Prediction with Decision Trees and Student Performance Data
- Random Forests
- Predicting Bird Species with Random Forests
- The Problem of Text Classification
- Detecting YouTube Comment Spam with Bag of Words and Random Forests
- Word2Vec Models
- Detecting Positive/Negative Sentiment in User Reviews
- Neural Networks
- Identifying the Genre of a Song Using Audio Analysis and Neural Networks
- Revising the Spam Detector to Use Neural Networks
- Overview of Deep Learning and Convolutional Neural Networks
- Identifying Handwritten Mathematical Symbols with Convolutional Neural Networks
- Revising the Bird Species Identifier to Use Images