

Sevgili Network Ekibi,

Dijital Dönüşüm ve İnovasyon Programı Turkcell NT ekiplerinde çalışan network mühendisleri için özel olarak tasarlandı 😊 Eğitimler içinde bulunduğumuz dijital çağın gerekliliklerini karşılayabilecek yetkinlikleri kazandırmak için pratik uygulamalı olarak hazırlandı.

Bu programa katılan kişiler Python programlama dilinde advanced seviye algoritma yönetimi bilgisine sahip olurken; güncel teknolojilerin ağ yönetiminde nasıl kullanılacağı konusunda pratik tecrübe sahibi olacaklar.

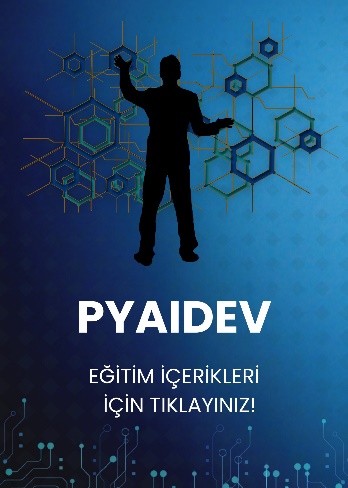
**Programlarımız iki farklı odakta hazırlandı.**

1. Pratik uygulamalı olarak Advanced seviye ağ otomasyonu, API Geliştirme ve ücretli & açık kaynak Generative AI API çözümlerini kullanarak; network mühendislerinin günlük işlerine yardımcı olacak akıllı chatbot' ların üretilmesi.
2. Veri bilimini ağ teknolojilerinde mantıksal topoloji görselleştirme ve analizi için kullandıktan sonra ağ otomasyonunda karşılaşılan anormallikleri ve izinsiz girişleri tespit edebilmek adına yapay zeka modelleri geliştirmek

Program içeriklerini dikkatlice inceleyerek, sizler için en uygun olanı seçmenizi tavsiye ediyoruz.

Eğitim içeriklerini ve tüm detaylarını aşağıda bulabilirsiniz.

**Eğitim İçerikleri:**

**Program İsmi: AI4Net**

**Program Eğitimleri:**

* **Python Programming Language Intermediate & Advanced**
* **Network Visualization With Data Science**
* **Network Intrusion Detection With AI**

**Program amacı:**Katılımcılarımıza advanced seviye algoritma yönetimi öğrettikten sonra:  
-Veri Ön işleme, Veri Görselleştirme, Veri Analizi  
-Veri bilimini ağ teknolojilerinde mantıksal topoloji görselleştirme ve analizi   
-Ağ otomasyonunda karşılaşılan izinsiz girişleri tespit edebilmek adına yapay zeka modelleri geliştirmek.  
  
**Eğitim İçerikleri:**

**1.Python Programming Language Intermediate & Advanced**

**Eğitim Kapsamı:**

-Advanced Seviye Algoritma Yönetimi  
-REST API'ın Web Servislerinde Çalışması  
-API Data Formatı JSON'ın Parsellenmesi  
-HTML Parselleme  
-Data Formatlarının Yönetilmesi  
-PostgreSQL

Duration: 5 Days / 35 Hours

Course Prerequisites:

-Attending official CCNA Enterprise Course

-or having a valid CCNA Enterprise certificate

-or to have knowledge in CCNA Enterprise level for Cisco networking solutions

Course Purpose: The purpose of this course:

-is teaching the students how to use Python Programming Language for advanced algorithm management

Course Summary:

Part 1: Advanced Algoritms With Python

Part 2: REST API With Python & GIT

Part 3: Parsing API Data Format JSON With Python

Part 4: Data Frame Management and HTML Parsing

Part 5: SQL With Python

Course Index:

**Part 1: Advanced Algoritms With Python**

Module 1.1: Language Overview

Module 1.2: Standard Data Types

Module 1.3: Flow Control

Module 1.4: Functions

Module 1.5: Lists and Tuples

Module 1.6: Dictionaries

Module 1.7: External Libraries

Module 1.8: Basic File Operations

Module 1.9: Exception Handling

Module 1.10: OS Operations & File Management

Module 1.11: Advanced Algoritms

Module 1.12: Log File Index Management

Module 1.13: Python Code Index Management At Any Folder

Module 1.14: Object Oriented Programing Encapsulation

Module 1.15: Object Oriented Programing Inheritance

Module 1.16: Parsing Star Wars Episode 3 Scenario

Module 1.17: Regular Expressions Parsing Words.txt file

Module 1.18: Regular Expressions Kill Bill Phrase With regex101

Module 1.19: Regular Expressions Parsing Emails

**Part 2: REST API With Python & GIT**

Module 2.1: List Comprehension Lab

Module 2.2: What is Model Driven Automation

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Module 2.13: Git Merge

**Part 3: Parsing API Data Format JSON With Python**

Module 3.1: Parsing Capital Cities JSON With Python Lab

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Module 5.4: Executing Basic PostgreSQL Queries in Python (Insert, Select, Update, Delete)

Module 5.5: Advanced PostgreSQL Queries in Python (ORDER BY, GROUP BY, INNER JOIN)

**2.Network Visualization With Data Science**

**Eğitim Kapsamı:**

-Veri Ön işleme: Pandas, Numpy  
-Veri Görselleştirme: Matplotblib, Seaborn, Plotly, Dash  
-Veri Analizi: Pandas, Numpy, Matplotblib, Seaborn  
-Veri bilimini ağ teknolojilerinde mantıksal topoloji görselleştirme ve analizi: NetworkX

Duration: 5 Days / 35 Hours

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-Attending Knowledge Club Python Programming Course

Course Purpose: The purpose of this course:

-is teaching the students how to make network Visualization with data science

Course Summary:

1: Data Science Introduction

2: Data Pre-Processing

3 Data Visualization

4: Introduction To NetworkX

5: Using NetworkX to Visualize Campus Network

Course Index:

Module 1: Introduction

Module 1.1: What is Data Science ?

Module 1.2: What is Artificial Intelligence ?

Module 1.3: The Relation Between Artificial Intelligence, Data Science, Machine/Deep Learning

Module 1.4: How to make Network Visualization with Data Science

Module 2: Data Pre-Processing

Module 2.1: Pandas DataFrame Append, Concat, Transpose Lab

Module 2.2: Pandas Nunique/Value Count

Module 2.3: Copy Sheet-Delete Row & Columns at Excel With Openpyxl Lab

Module 2.4: Seperate & Save Sheets As New WorkBooks at Excel With Xlwing Lab

Module 2.5: Merge & Seperate Workbooks into New Workbooks at Excel With Openpyxl Lab

Module 3: Data Visualization

Module 3.1: Intro to Matplotlib

Module 3.2: Matplotlib Subplots

Module 3.3: Matplotlib 3 Subplots Pie

Module 3.4: Matplotlib With Pandas Data Reader

Module 3.5: Customize Time Series Colorado Lab (rotation, indent, time format)

Module 3.6: Matplotlib Bonus Scatter Lab

Module 3.7: Matplotlib Annotate & Arrowprops Lab

Module 3.8: Advanced 3D Visualization With Matplotlib

Module 3.9: Data Visualization With PyGoogleChart

Module 3.10: Data Visualization With Plotly

Module 3.11: Data Visualization With Dash

Module 4: Introduction To NetworkX

Module 4.1: Creating a network using NetworkX

Module 4.2: Network Connectivity

Module 4.3: Graph Optimization with NetworkX in Python

Module 4.4: Introducing Graphs

Module 4.5: Load Data

Module 4.6: Create Graph

Module 4.7: Inspect Graph

Module 4.8: Visualize Graph

Module 4.9: Overview of CPP Algorithm

Module 4.10: CPP Step 1: Find Nodes of Odd Degree

Module 4.11: CPP Step 2: Find Min Distance Pairs

Module 5: Using NetworkX to Visualize Campus Network

Module 5.1: Usage Areas of NetworkX in Campus Network (OSPF, EIGRP, Network Security, QoS, Redundancy, Vlan, Traffic flow)

Module 5.2: Complex Topology Creation

Module 5.3: Path Analysis

Module 5.4: Network Metrics Calculation

Module 5.5: Calculating Shortest Paths

Module 5.6: Subgraph Analysis

Module 5.7: Exporting and Importing Network Configurations

Module 5.8: Analyzing Network Topology

Module 5.9: Visualizing Network Dynamics

Module 5.10: Simulate Network Changes

Module 5.11: Topology Optimization

**3.Network Intrusion Detection With AI**

**Eğitim Kapsamı:**

-Makine Öğrenme Denetimli Öğrenme: Linear, Polynomial, Multiple Regresyonlar  
-Makine Öğrenme Denetimli Öğrenme: Lojistik Regresyonlar  
-Lojistik Regresyon ile İzinsiz Ağ Girişi Tespiti  
-Derin Öğrenme Yapay Sinir Ağları  
-Multiple EarlyStop Callback  
-Multiple EarlyStop Callback Yapay Sinir Ağları ile İzinsiz Ağ Girişi Tespiti

Duration: 5 Days / 35 Hours

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-Attending Knowledge Club Python Programming Course

-Attending Knowledge Club Network Visualization With Data Science Course

Course Purpose: The purpose of this course:

-is teaching the students how to use artificial intelligence solutions with python for network intrusion detection

Course Summary:

1: Data Science Summary (Data Pre-processing, Data Visualization, Data Analysis)

2: Machine Learning With Python

3 Deep Learning With Python

Course Index:

Part 1: Data Analysis With Python

Module 1.1: Seaborn (Lineplot, Scatterplot, Heatmap, Pairplot, Barplot, Catplot, Boxplot)

Module 1.2: Heart Attack Analysis Project

Part 2: Machine Learning With Python

Module 2.1: What is Machine Learning

Module 2.2: Machine Learning Methods

Module 2.3: Supervised Machine Learning Regression Introduction

Module 2.4: Advertisement Dataset Multiple Linear Regression

Module 2.5: Advertisement Dataset Polynomial Regression

Module 2.6: How to Save Data Model and Load

Module 2.7: Cross Validation & Lasso

Module 2.8: Standard Scaler

Module 2.9: Label Encoding and Logistic Regression

Module 2.10: Network Intrusion Detection using Logistic Regression

Part 3: Deep Learning With Python

Module 3.1: Introduction To Deep Learning

Module 3.2: What is Neural Network ?

Module 3.3: What is Deep Nerural Network ?

Module 3.4: How to Design Deep Neural Network ?

Module 3.5: Artificial Neural Networks

Module 3.6: Numerical Data ANN

Module 3.7: Binary Classification ANN

Module 3.8: Multiple Classification & One Hot Encoder ANN

Module 3.9: Early Stop Callback

Module 3.10: Multiple Early Stop CallBacks

Module 3.11: Numerical Data & Binary/Multiple Classification ANN Project With Multiple Early Stop CallBacks

Module 3.12: Network Intrusion Detection using ANN

**Program İsmi: PyNetAI**

**Program Eğitimleri:**

* **Python Programming Language Intermadiate&Advanced**
* **Network Automation & API Development With Python V2**
* **Network Automation With AI**

**Program amacı:**   
Katılımcılarımıza advanced seviye algoritma yönetimi öğrettikten sonra:  
-API Geliştirme  
-Network cihazlarından gelen bilgileri editleyecek Custom Parser üretimi  
-Pratik uygulamalı olarak Advanced seviye ağ otomasyonu öğretmek  
-Generative AI API çözümlerini kullanarak; network mühendislerinin günlük işlerine yardımcı olacak akıllı chatbot'ların üretilmesi.

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**2.Network Automation & API Development With Python V2**

**Eğitim Kapsamı**

-SSH Protokolu üzerinden Netmiko Python kütüphanesi Cisco IOS, IOS-XE, IOS-XR cihazlarının yönetilmesi  
-Excel, JSON, TXT ve diğer data formatlarının network otomasyonda kullanılması  
-Multi-Threading ile bütün cihazların aynı anda konfigüre edilmesi  
-TextFSM, NTC Template, TTP, Jinja Template ile Network cihazlarından gelen bilgileri editleyecek Custom Parser üretimi  
-Backend API Geliştirme  
-TTP Parser API Geliştirme

**Duration: 5 Days / 35 Hours**

Course Prerequisites:

-Attending official CCNP Enterprise Course

-or having a valid CCNP Enterprise certificate

-or to have knowledge in CCNP Enterprise level for Cisco networking solutions

-Attending Knowledge Club Python Programming Course

Course Purpose: The purpose of this course:

-is teaching the students how to use network automation with python for Cisco IOS, IOS-XE, IOS-XR devices and develop application programming interfaces for network management

**Course Summary:**

Module 1: Network Automation With Netmiko

Module 2: API Development With Flask

**Course Index:**

Module 1: Network Automation With Netmiko For Cisco IOS, IOS-XE, IOS-XR

Module 1.1: Introduction to Netmiko

Module 1.2: Introduction to TextFSM

Module 1.3: Configure Multiple Devices With Netmiko Via JSON

Module 1.4: Serial Numbers With Netmiko & TextFSM From Excel File

Module 1.5: Excel With Netmiko & TextFSM

Module 1.6: Configure Multiple Network Devices With Txt file

Module 1.7: Configure Multiple Network Devices With Multi-Threading and Netmiko

Module 1.8: NTC Template with Netmiko

Module 1.9: Configuration Cloning with TextFSM and Netmiko

Module 1.10: Network Access Control Management With Mac-Address Dynamic via Netmiko

Module 1.11: Gathering Interface Info from IOS devices With Netmiko

Module 1.12: Creating and Parsing Jinja Template

Module 1.13: Converting Yaml with Jinja Template and Configure Network Devices

Module 1.14: TTP Parsing With Netmiko

Module 2: API Development With Flask

Module 2.1: Object Oriented Programming

Module 2.2: Introduction to Flask & How Flask Works?

Module 2.3: Lottery

Module 2.4: Flask-RESTX GET/POST/PUT/DELETE Requests With Parameters & Swagger

Module 2.5: Multiply a & b With Flask RestX

Module 2.6: Multiply by 2 & Random Integer Generator

Module 2.7: Flask RestX & Reqparse

Module 2.8: Calculator With Flask RestX

Module 2.9: Get, Put, Post Delete Fruits

Module 2.10: Multiply by 2 With Flask RestX & Reqparse

Module 2.11: Random Integer Generator With Flask RestX & Reqparse

Module 2.12: Pizzaria With Flask RestX & Reqparse

Module 2.13: Network Inventory Flask RestX & Reqparse

Module 2.14: Parsing HTML With Python

Module 2.15: Flask Upload Photo

Module 2.16: Write Jinja Template At HTML File For Uploading Photo From Flask Python Code

Module 2.17: Flask Upload Excel

Module 2.18: Download Photo & Excel From Flask

Module 2.19: Flask ChatBot With HTML

Module 2.20: Integrate Open AI API With Flask HTML ChatBot

Module 2.21: Flask user\_input & option selection

Module 2.22: Create TTP Parser API

**3.Network Automation With AI**

**Eğitim Kapsamı:**

-Yang  
-XML  
-NetConf  
-RestConf  
-PyATS ile network konfigürasyon testi ve konfigürasyon datası parselleme  
-Generative AI API çözümlerini kullanarak; network mühendislerinin günlük işlerine yardımcı olacak akıllı chatbot'ların üretilmesi.

**Duration: 5 Days / 35 Hours**

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-Attending Knowledge Club Python Programming Course

-Attending Knowledge Club Network Automation & API Development With Python Course

Course Purpose: The purpose of this course:

-is teaching the students how to use network automation with artificial intelligence

**Course Summary:**

**Module 1: Parsing API Data Format XML With Python**

Module 2: Yang

Module 3: Netconf

Module 4: Restconf

Module 5: Network Testing With Cisco pyATS

Module 6: Network Automation With AI

**Course Index:**

Module 1: Parsing API Data Format XML With Python

Module 1.1: Parsing XML

Module 1.2: What is XML?

Module 1.3: Parsing XML With ElementTree: Washington University Course Schedule

Module 1.4: Parsing XML With ElementTree: KC Instructor List

Module 1.5: Parsing & Editting XML With ElementTree, xmltodict, xml.dom.minidom

Module 1.6: Parsing Device Config XML With ElementTree, xmltodict, xml.dom.minidom

Module 2: YANG Data Modeling Language

Module 2.1: What is YANG? How Yang Works?

Module 2.2: Installing Pyang on Ubuntu

Module 2.3: Working With Yang and XML via Pyang

Module 2.4: Install Yang on Ubuntu & Work With Pyang

Module 2.5: Yang & XML: module, namespace, prefix, container, leaf and leaf list statements

Module 2.6: Yang & XML: list, grouping, key, leafref

Module 2.7: Yang & XML: pattern, length, range and import statements

Module 2.8: Yang & XML: choices, when, enum, unit statements & Read only nodes

Module 3: Netconf

Module 3.1: What is Netconf? How Netconf Works?

Module 3.2: Enabling NetConf On Cisco IOS-XE

Module 3.3: get-config/Ncclient: Receive Configuration From Device

Module 3.4: edit-config/Ncclient: Configure A Device With NetConf

Module 3.5: Configuration With Yang Suite

Module 3.6: Use Yang Suite & Ncclient Together For Configuration

Module 3.7: Downloading YANG files via NETCONF from a device

Module 3.8: Developing XML Templates With Yang For NetConf

Module 4: Restconf

Module 4.1: What is RestConf? How RestConf Works?

Module 4.2: RestConf & Cisco Nexus Sandbox

Module 4.3: RestConf & Cisco IOS-XE Postman

Module 4.4: Configure Cisco IOS-XE Device With RestConf

Module 4.5: Using RestConf With JSON

Module 5: Network Testing With Cisco pyATS

Module 5.1: Installing pyATS

Module 5.2: Hands-on Environment/Lab

Module 5.3: Testbeds

Module 5.4: Genie Parse

Module 5.5: Genie Learn

Module 5.6: Genie Diff

Module 5.7: Genie Conf

Module 5.8: Network Testing With Cisco pyATS

Module 6: Network Automation With AI

Module 6.1: Upload Network Topology & Get Feedback From AI Chatbot

Module 6.2: Generating Network Automation Codes From Text

Module 6.3: Testing Network Automation Codes With AI Chatbot

Module 6.4: Executing Network Automation Codes With AI Chatbot

Module 6.5: Testing Network Automation Codes With PyATS

**Program İsmi: NetAnomalyDetect**

**Program Eğitimleri:**

* **Python Programming Language Intermadiate&Advanced:**
* **Network Visualization With Data Science**
* **Advanced Anomaly Detection With Python**

**Program amacı:**   
Katılımcılarımıza advanced seviye algoritma yönetimi öğrettikten sonra:  
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**2.Network Visualization With Data Science**

**Eğitim Kapsamı:**

-Veri Ön işleme: Pandas, Numpy  
-Veri Görselleştirme: Matplotblib, Seaborn, Plotly, Dash  
-Veri Analizi: Pandas, Numpy, Matplotblib, Seaborn  
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Module 2.3: Copy Sheet-Delete Row & Columns at Excel With Openpyxl Lab

Module 2.4: Seperate & Save Sheets As New WorkBooks at Excel With Xlwing Lab

Module 2.5: Merge & Seperate Workbooks into New Workbooks at Excel With Openpyxl Lab

Module 3: Data Visualization

Module 3.1: Intro to Matplotlib

Module 3.2: Matplotlib Subplots

Module 3.3: Matplotlib 3 Subplots Pie

Module 3.4: Matplotlib With Pandas Data Reader

Module 3.5: Customize Time Series Colorado Lab (rotation, indent, time format)

Module 3.6: Matplotlib Bonus Scatter Lab

Module 3.7: Matplotlib Annotate & Arrowprops Lab

Module 3.8: Advanced 3D Visualization With Matplotlib

Module 3.9: Data Visualization With PyGoogleChart

Module 3.10: Data Visualization With Plotly

Module 3.11: Data Visualization With Dash

Module 4: Introduction To NetworkX

Module 4.1: Creating a network using NetworkX

Module 4.2: Network Connectivity

Module 4.3: Graph Optimization with NetworkX in Python

Module 4.4: Introducing Graphs

Module 4.5: Load Data

Module 4.6: Create Graph

Module 4.7: Inspect Graph

Module 4.8: Visualize Graph

Module 4.9: Overview of CPP Algorithm

Module 4.10: CPP Step 1: Find Nodes of Odd Degree

Module 4.11: CPP Step 2: Find Min Distance Pairs

Module 5: Using NetworkX to Visualize Campus Network

Module 5.1: Usage Areas of NetworkX in Campus Network (OSPF, EIGRP, Network Security, QoS, Redundancy, Vlan, Traffic flow)

Module 5.2: Complex Topology Creation

Module 5.3: Path Analysis

Module 5.4: Network Metrics Calculation

Module 5.5: Calculating Shortest Paths

Module 5.6: Subgraph Analysis

Module 5.7: Exporting and Importing Network Configurations

Module 5.8: Analyzing Network Topology

Module 5.9: Visualizing Network Dynamics

Module 5.10: Simulate Network Changes

Module 5.11: Topology Optimization

**3.Advanced Anomaly Detection With AI**

**Eğitim Kapsamı:**-Makine Öğrenme Denetimli Öğrenme: Linear, Polynomial, Multiple Regresyonlar  
-Makine Öğrenme Denetimli Öğrenme: Lojistik Regresyonlar  
-Lojistik Regresyon ile İzinsiz Ağ Girişi Tespiti  
-Makine Öğrenme Denetimsiz Öğrenme: RFM Analizi/Hierarchical Clustering/Customer Segmentation  
-Derin Öğrenme Yapay Sinir Ağları  
-Multiple EarlyStop Callback  
-Multiple EarlyStop Callback Yapay Sinir Ağları ile İzinsiz Ağ Girişi Tespiti  
-Yapay Sinir Ağları Multiple Text Classification  
-Yapay Sinir Ağı ChatBot'un Network Otomasyonda Kullanılması  
-Tekrarlamalı Sinir Ağları  
-Long Short Term Memory & Zaman Serileri  
-LSTM ve Zaman Serileri ile Anomaly Tespiti  
-Generative AI

Duration: 5 Days / 35 Hours

Course Prerequisites:

-Attending Knowledge Club Python Programming Course

-Attending Knowledge Club Network Visualization With Data Science

Course Purpose: The purpose of this course:

-is teaching the students how to use artificial intelligence solutions for network automation.

Course Summary:

1: Machine Learning With Python

2: Deep Learning With Python

3 Generative AI With Python

Course Index:

Part 1: Machine Learning With Python

Module 1.1: What is Machine Learning

Module 1.2: Machine Learning Methods

Module 1.3: Supervised Machine Learning Regression Introduction

Module 1.4: Advertisement Dataset Multiple Linear Regression

Module 1.5: Advertisement Dataset Polynomial Regression

Module 1.6: How to Save Data Model and Load

Module 1.7: Cross Validation & Lasso

Module 1.8: Standard Scaler

Module 1.9: Label Encoding & Logistic Regression

Module 1.10: Network Intrusion Detection With Logistic Regression

Module 1.11: 1 Unsupervised Learning

Module 1.12: RFM Analysis With Hierarchical Clustering/Customer Segmentation

Part 2: Deep Learning With Python

Module 2.1: Introduction To Deep Learning

Module 2.2: What is Neural Network ?

Module 2.3: What is Deep Nerural Network ?

Module 2.4: How to Design Deep Neural Network ?

Module 2.5: Artificial Neural Networks

Module 2.6: Numerical Data ANN

Module 2.7: Binary Classification ANN

Module 2.8: Multiple Classification & One Hot Encoder ANN

Module 2.9: Early Stop Callback

Module 2.10: Multiple Early Stop CallBacks

Module 2.11: Numerical Data & Binary/Multiple Classification ANN Project With Multiple Early Stop CallBacks

Module 2.12: Network Intrusion Detection With ANN

Module 2.13: Mulliple Text Classification

Module 2.14: Network Automation With ANN ChatBot

Part 4: Recurrent Neural Networks

Module 4.1: RNN

Module 4.2: Long Short Term Memory & Time Series

Module 4.3: Stock Market Prediction With LSTM

Module 4.4 Anomaly Detection With LSTM

Part 5: Generative AI:

Module 5.1: Text Generation From Text

Module 5.2: Sentimental Analysis

Module 5.3: Code Generation From Text

Module 5.4: Intention Analysis

Module 5.5: Fine-Tuning Models

**Program İsmi: PyNetNSO**

**Program Eğitimleri:**

* **Python Programming Language Intermadiate&Advanced**
* **Network Automation & API Development With Python V1**
* **Network Automation With NSO**

Program amacı:

Katılımcılarımıza advanced seviye algoritma yönetimi öğrettikten sonra:  
-API Geliştirme  
-Network cihazlarından gelen bilgileri editleyecek Custom Parser üretimi  
-Python İle Dynamic Template üretmek  
-Pratik uygulamalı olarak Advanced seviye ağ otomasyonu öğretmek  
-Cisco NSO'da dynamic konfigürasyon templateleri üretmek

**Eğitim İçerikleri:**

**1.Python Programming Language Intermediate & Advanced**

**Eğitim Kapsamı:**

-Advanced Seviye Algoritma Yönetimi  
-REST API'ın Web Servislerinde Çalışması  
-API Data Formatı JSON'ın Parsellenmesi  
-HTML Parselleme  
-Data Formatlarının Yönetilmesi  
-PostgreSQL

Duration: 5 Days / 35 Hours

Course Prerequisites:

-Attending official CCNA Enterprise Course

-or having a valid CCNA Enterprise certificate

-or to have knowledge in CCNA Enterprise level for Cisco networking solutions

Course Purpose: The purpose of this course:

-is teaching the students how to use Python Programming Language for advanced algorithm management

Course Summary:

Part 1: Advanced Algoritms With Python

Part 2: REST API With Python & GIT

Part 3: Parsing API Data Format JSON With Python

Part 4: Data Frame Management and HTML Parsing

Part 5: SQL With Python

Course Index:

**Part 1: Advanced Algoritms With Python**

Module 1.1: Language Overview

Module 1.2: Standard Data Types

Module 1.3: Flow Control

Module 1.4: Functions

Module 1.5: Lists and Tuples

Module 1.6: Dictionaries

Module 1.7: External Libraries

Module 1.8: Basic File Operations

Module 1.9: Exception Handling

Module 1.10: OS Operations & File Management

Module 1.11: Advanced Algoritms

Module 1.12: Log File Index Management

Module 1.13: Python Code Index Management At Any Folder

Module 1.14: Object Oriented Programing Encapsulation

Module 1.15: Object Oriented Programing Inheritance

Module 1.16: Parsing Star Wars Episode 3 Scenario

Module 1.17: Regular Expressions Parsing Words.txt file

Module 1.18: Regular Expressions Kill Bill Phrase With regex101

Module 1.19: Regular Expressions Parsing Emails

**Part 2: REST API With Python & GIT**

Module 2.1: List Comprehension Lab

Module 2.2: What is Model Driven Automation

Module 2.3: What is HTTP ?

Module 2.4: How HTTP works ?

Module 2.5: What is Rest API

Module 2.6: What are API Data Formats?

Module 2.7: List Comprehension

Module 2.8: Parsing Public Colorado Population API With Python Lab

Module 2.9: Parsing News API With Python Lab

Module 2.10: Parsing NASA API With Python Lab

Module 2.11: Webex API With OPEN AI API

Module 2.12: Use Git For Version Control

Module 2.13: Git Merge

**Part 3: Parsing API Data Format JSON With Python**

Module 3.1: Parsing Capital Cities JSON With Python Lab

Module 3.2: Parsing Star War JSON With Python Lab

Module 3.3: Parsing Game Of Thrones JSON With Python Lab

**Part 4: Data Frame Management and HTML Parsing**

Module 4.1: Creating Data Frames From JSON, Python Data Types, Excel, CSV

Module 4.2: Managing Data Frames

Module 4.2: Sorting Data With Multiple Queries at Data Frames

Module 4.2: How HTML Parsing Works?

Module 4.3: HTML Parsing For imdb.html

Module 4.4: HTML Parsing For StackOverFlow Pages

**Part 5: PostgreSQL With Python**

Module 5.1: Install psycopg2

Module 5.2: Connecting Python to PostgreSQL

Module 5.3: Creating a table in PostgreSQL

Module 5.4: Executing Basic PostgreSQL Queries in Python (Insert, Select, Update, Delete)

Module 5.5: Advanced PostgreSQL Queries in Python (ORDER BY, GROUP BY, INNER JOIN)

**2.Network Automation & API Development With Python V1**

**Eğitim Kapsamı:**  
-SSH Protokolu üzerinden Netmiko Python kütüphanesi ile Cisco IOS, IOS-XE, IOS-XR cihazlarının yönetilmesi  
-HTTPS Protokolu üzerinden Requests Python kütüphanesi ile Cisco NXOS cihazlarının yönetilmesi  
-Excel, JSON, TXT ve diğer data formatlarının network otomasyonda kullanılması  
-Multi-Threading ile bütün cihazların aynı anda konfigüre edilmesi  
-TextFSM, NTC Template, TTP, Jinja Template ile Network cihazlarından gelen bilgileri editleyecek Custom Parser üretimi  
-Python ile Dynamic konfigürasyon templateleri üretmek  
-Backend API Geliştirme  
-TTP Parser API Geliştirme

Duration: 5 Days / 35 Hours

Course Prerequisites:

-Attending official CCNP Enterprise Course

-or having a valid CCNP Enterprise certificate

-or to have knowledge in CCNP Enterprise level for Cisco networking solutions

-Attending Knowledge Club Python Programming Course

Course Purpose: The purpose of this course:

-is teaching the students how to use network automation with python and develop application programming interfaces for network management

Course Summary:

Module 1: Network Automation With Netmiko

Module 2: Network Automation With NXAPI

Module 3: API Development With Flask

Course Index:

Module 1: Network Automation With Netmiko(SSH for Cisco IOS, IOS-XE, IOS-XR)

Module 1.1: Introduction to Netmiko (SSH with Python)

Module 1.2: Introduction to TextFSM (Parsing Data Output From Network Devices )

Module 1.3: Configure Multiple Devices With Netmiko Via JSON (devices.json, config.json, for loop with try & except)

Module 1.4: Gather Serial Numbers With Netmiko & TextFSM From TXT File (devices.txt, for loop with try & except)

Module 1.5: Gather Serial Numbers With Netmiko & TextFSM From Excel File (devices.xlsx, for loop with try & except)

Module 1.6: Configure Multiple Network Devices With Txt file (Static Config)

Module 1.7: Configure Multiple Network Devices With Multi-Threading and Netmiko (Threading: From each device at the same time)

Module 1.8: Create and Parse Custom NTC Template For Network Automation (Parsing Data Output From Network Devices)

Module 1.9: Configuration Cloning with TextFSM and Netmiko (Clone router loopback config info into another router)

Module 1.10: Creating Dynamic Configuration Templates With Jinja.

Module 1.11: Port Management With Mac-Address Dynamic Info via Netmiko.

Module 1.12: OSPF Configuration With Netmiko With Dynamic Jinja Templates

Module 1.13: Create Custom Parser With TTP File (Parsing data output from network devices with your own custom parser file)

Module 1.14: Gathering Interface Info From NXOS & IOS-XE With Netmiko

Module 2 Network Automation With NXAPI (HTTPS For Cisco NXOS)

Module 2.1: NXAPI with Sandbox

Module 2.2: NXAPI with Postman

Module 2.3: NXAPI with Python (Requests for NXAPI)

Module 2.4: Creating and Parsing Jinja Template

Module 2.5: Converting Yaml with Jinja Template and Configure Nexus

Module 2.6: Create Back-End Functions of Sandbox (Convert to json, Configure With json, Validate)

Module 2.7: Multi-Threading: Netmiko & NXAPI (Threading With SSH & HTTPS)

Module 3: API Development With Flask

Module 3.1: Object Oriented Programming

Module 3.2: Introduction to Flask & How Flask Works?

Module 3.3: Lottery

Module 3.4: Flask-RESTX GET/POST/PUT/DELETE Requests With Parameters & Swagger

Module 3.5: Multiply a & b With Flask RestX

Module 3.6: Multiply by 2 & Random Integer Generator

Module 3.7: Flask RestX & Reqparse

Module 3.8: Calculator With Flask RestX

Module 3.9: Get, Put, Post Delete Fruits

Module 3.10: Multiply by 2 With Flask RestX & Reqparse

Module 3.11: Random Integer Generator With Flask RestX & Reqparse

Module 3.12: Pizzaria With Flask RestX & Reqparse

Module 3.13: Network Inventory Flask RestX & Reqparse

Module 3.14: Parsing HTML With Python

Module 3.15: Flask Upload Photo

Module 3.16: Write Jinja Template At HTML File For Uploading Photo From Flask Python Code

Module 3.17: Flask Upload Excel

Module 3.18: Download Photo & Excel From Flask

Module 3.19: Flask ChatBot With HTML

Module 3.20: Integrate Open AI API With Flask HTML ChatBot

Module 3.21: Flask user\_input & option selection

Module 3.22: Create NXAPI Sandbox With Flask

Module 3.23: Network Configuration & TTP Parser API

**3.Network Automation With NSO**

**Eğitim Kapsamı:**  
-Yang  
-XML  
-NetConf  
-RestConf  
-Cisco NSO System Install  
-Loading Ned Packets  
-Synchronization & Groups  
-NSO CLI Konfigürasyon  
-NSO RestConf Konfigürasyon  
-Rollbacks   
-Dynamic Templates via CLI  
-Dynamic Templates via RestConf  
-Compliance Reports  
-Backup  
-Migrate Ned Packets

Duration: 5 Days / 35 Hours

Course Prerequisites:

-Attending official CCNP Enterprise Course

-or having a valid CCNP Enterprise certificate

-or to have knowledge in CCNP Enterprise level for Cisco networking solutions

-Attending Knowledge Club Python Programming Course

-Attending Knowledge Club Network Automation & API Development With Python Course

Course Purpose: The purpose of this course:

-is teaching the students how to use network automation with artificial intelligence

Course Summary:

Module 1: Parsing API Data Format XML With Python

Module 2: Yang

Module 3: Netconf

Module 4: Restconf

Module 5: Network Automation With Cisco NSO

Course Index:

Module 1: Parsing API Data Format XML With Python

Module 1.1: Parsing XML

Module 1.2: What is XML?

Module 1.3: Parsing XML With ElementTree: Washington University Course Schedule

Module 1.4: Parsing XML With ElementTree: KC Instructor List

Module 1.5: Parsing & Editting XML With ElementTree, xmltodict, xml.dom.minidom

Module 1.6: Parsing Device Config XML With ElementTree, xmltodict, xml.dom.minidom

Module 2: YANG Data Modeling Language

Module 2.1: What is YANG? How Yang Works?

Module 2.2: Installing Pyang on Ubuntu

Module 2.3: Working With Yang and XML via Pyang

Module 2.4: Install Yang on Ubuntu & Work With Pyang

Module 2.5: Yang & XML: module, namespace, prefix, container, leaf and leaf list statements

Module 2.6: Yang & XML: list, grouping, key, leafref

Module 2.7: Yang & XML: pattern, length, range and import statements

Module 2.8: Yang & XML: choices, when, enum, unit statements & Read only nodes

Module 3: Netconf

Module 3.1: What is Netconf? How Netconf Works?

Module 3.2: Enabling NetConf On Cisco IOS-XE

Module 3.3: get-config/Ncclient: Receive Configuration From Device

Module 3.4: edit-config/Ncclient: Configure A Device With NetConf

Module 3.5: Configuration With Yang Suite

Module 3.6: Use Yang Suite & Ncclient Together For Configuration

Module 3.7: Downloading YANG files via NETCONF from a device

Module 3.8: Developing XML Templates With Yang For NetConf

Module 4: Restconf

Module 4.1: What is RestConf? How RestConf Works?

Module 4.2: RestConf & Cisco Nexus Sandbox

Module 4.3: RestConf & Cisco IOS-XE Postman

Module 4.4: Configure Cisco IOS-XE Device With RestConf

Module 4.5: Using RestConf With JSON

Module 5: NSO

Module 5.1: NSO System Installation

Module 5.2: Loading NED Packages & Adding Network Devices

Module 5.3: Synchronization & Groups

Module 5.4: Device Configuration With NSO: Vlan, Interface, Loopback, OSPF

Module 5.5: Use NSO With RestConf

Module 5.6: How to make Rollbacks At NSO

Module 5.7: Create a Vlan Template Via CLI (Static)

Module 5.8: Create a Port Acces Template Via CLI (Dynamic)

Module 5.9: Create a Device Template With RestConf

Module 5.10: Create Compliance Reports

Module 5.11: Perform Backup and Restore NSO

Module 5.12: Install New NED Packages

Module 5.13: Migrate NED For A Device

**Program İsmi: PyAIDev**

**Program Eğitimleri:**

* **Python Programming Language Intermadiate&Advanced**
* **API Development & Network Automation With Python**
* **Developing AI Models For Network Management**

**Program amacı:**

Katılımcılarımıza advanced seviye algoritma yönetimi öğrettikten sonra:  
-API Geliştirme  
-Network cihazlarından gelen bilgileri editleyecek Custom Parser üretimi  
-Generative AI API çözümlerini kullanarak; network mühendislerinin günlük işlerine yardımcı olacak akıllı chatbot'ların üretilmesi.

-Ağ otomasyonunda karşılaşılan izinsiz girişleri tespit edebilmek adına yapay zeka modelleri geliştirmek.

**Eğitim İçerikleri:**

**1.Python Programming Language Intermediate & Advanced**

**Eğitim Kapsamı:**

-Advanced Seviye Algoritma Yönetimi  
-REST API'ın Web Servislerinde Çalışması  
-API Data Formatı JSON'ın Parsellenmesi  
-HTML & XML Parselleme  
-Data Formatlarının Yönetilmesi  
-PostgreSQL

Duration: 5 Days / 35 Hours

Course Prerequisites:

-Attending official CCNA Enterprise Course

-or having a valid CCNA Enterprise certificate

-or to have knowledge in CCNA Enterprise level for Cisco networking solutions

Course Purpose: The purpose of this course:

-is teaching the students how to use Python Programming Language for advanced algorithm management

Course Summary:

Part 1: Advanced Algoritms With Python

Part 2: REST API & Parsing API Data Format JSON With Python

Part 3: Data Frame Management and HTML&XML Parsing

Part 4: PostgreSQL With Python

Course Index:

**Part 1: Advanced Algoritms With Python**

Module 1.1: Language Overview

Module 1.2: Standard Data Types

Module 1.3: Flow Control

Module 1.4: Functions

Module 1.5: Lists and Tuples

Module 1.6: List Comprehension

Module 1.7: Dictionaries

Module 1.8: External Libraries

Module 1.9: Basic File Operations

Module 1.10: Exception Handling

Module 1.11: OS Operations & File Management

Module 1.12: Advanced Algoritms

Module 1.13: Log File Index Management

Module 1.14: Python Code Index Management At Any Folder

Module 1.15: Object Oriented Programing Encapsulation

Module 1.16: Object Oriented Programing Inheritance

Module 1.17: Parsing Star Wars Episode 3 Scenario

Module 1.18: Regular Expressions Parsing Words.txt file

Module 1.19: Regular Expressions Search, Match, Group

Module 1.20: Regular Expressions Parsing Emails

**Part 2: REST API With Python & GIT**

Module 2.1: List Comprehension Lab

Module 2.2: What is Model Driven Automation

Module 2.3: What is HTTP ?

Module 2.4: How HTTP works ?

Module 2.5: What is Rest API

Module 2.6: What are API Data Formats?

Module 2.7: List Comprehension

Module 2.8: Parsing JSON With Python

Module 2.9: Parsing Star War JSON With Python

Module 2.10: Parsing Game Of Thrones JSON With Python

Module 2.11: Parsing Public Colorado Population API With Python Lab

Module 2.12: Parsing News API With Python Lab

Module 2.13: Parsing Open Weather API With Python Lab

Module 2.14: Webex API With OPEN AI API

Module 2.15: Use Git For Version Control

**Part 3: Data Frame Management and HTML Parsing**

Module 3.1: Creating Data Frames From JSON, Python Data Types, Excel, CSV

Module 3.2: Managing Data Frames

Module 3.2: Sorting Data With Multiple Queries at Data Frames

Module 3.3: How HTML Parsing Works?

Module 3.4: HTML Parsing For imdb.html

Module 3.5: HTML Parsing For StackOverFlow Pages

Module 3.6: Parsing API Data Format XML With Python

Module 3.7: Parsing XML With ElementTree: Washington University Course Schedule

Module 3.8: Parsing XML With ElementTree: KC Instructor List

Module 3.9: Parsing & Editting XML With ElementTree, xmltodict, xml.dom.minidom

Module 3.10: Parsing Device Config XML With ElementTree, xmltodict, xml.dom.minidom

**Part 4: PostgreSQL With Python**

Module 4.1: Install psycopg2

Module 4.2: Connecting Python to PostgreSQL

Module 4.3: Creating a table in PostgreSQL

Module 4.4: Executing Basic PostgreSQL Queries in Python (Insert, Select, Update, Delete)

Module 4.5: Advanced PostgreSQL Queries in Python (ORDER BY, GROUP BY, INNER JOIN)

**2.API Development & Network Automation With Python**

**Eğitim Kapsamı**

-API Gelistirme

-Backend API Geliştirme

-Front end Geliştirme

-API ChatBot Geliştirme

-SSH Protokolu üzerinden Netmiko Python kütüphanesi Cisco IOS, IOS-XE, IOS-XR cihazlarının yönetilmesi  
-Excel, JSON, TXT ve diğer data formatlarının network otomasyonda kullanılması  
-Multi-Threading ile bütün cihazların aynı anda konfigüre edilmesi  
-TextFSM, NTC Template, TTP, Jinja Template ile Network cihazlarından gelen bilgileri editleyecek Custom Parser üretimi  
-TTP Parser API Geliştirme

-Generative AI ile Network Automation ChatBot Üretilmesi

Duration: 5 Days / 35 Hours

Course Prerequisites:

-Attending official CCNP Enterprise Course

-or having a valid CCNP Enterprise certificate

-or to have knowledge in CCNP Enterprise level for Cisco networking solutions

-Attending Knowledge Club Python Programming Course

Course Purpose: The purpose of this course:

-is teaching the students how to use network automation with python for Cisco IOS, IOS-XE, IOS-XR devices and develop application programming interfaces for network management

Course Summary:

Part 1: API Development With Flask

Part 2: Network Automation With Netmiko

Part 3: Developing AI ChatBot For Network Automation

Course Index:

**Part 1: API Development With Flask**

Module 1: API Development With Flask

Module 1.1: Introduction to Flask & How Flask Works?

Module 1.2: Flask Lottery

Module 1.3: Flask-RESTX GET/POST/PUT/DELETE

Module 1:4 Flask Requests With Parameters & Swagger

Module 1.5: Multiply a & b With Flask RestX

Module 1.6: Multiply by 2 & Random Integer Generator With Flask RestX

Module 1.7: Flask RestX & Reqparse

Module 1.8: Calculator With Flask RestX

Module 1.9: Get, Put, Post Delete Fruits

Module 1.10: Multiply by 2 With Flask RestX & Reqparse

Module 1.11: Random Integer Generator With Flask RestX & Reqparse

Module 1.12: Pizzaria With Flask RestX & Reqparse

Module 1.13: Network Inventory Flask RestX & Reqparse

Module 1.14: Parsing HTML With Jinja Template

Module 1.15: Flask Upload Photo

Module 1.16: Write Jinja Template At HTML File For Uploading Photo From Flask Python Code

Module 1.17: Flask Upload Excel & Photo

Module 1.18: Download Photo & Excel From Flask

Module 1.19: Flask ChatBot With HTML

Module 1.20: Integrate Open AI API With Flask HTML ChatBot

Module 1.21: Flask user\_input & option selection

Module 1.22: Multi-Task ChatBot With Upload Photo&PDF, user\_input&option selection (Open AI API, Gemini API, Llama2 API)

Module 1.23: API With PostgreSQL

**Part 2: Network Automation With Netmiko**

Module 2: Network Automation (Cisco IOS, IOS-XE, IOS-XR)

Module 2.1: Create Excel File With Openpyxl From Txt File

Module 2.2: Delete Row, Columns Page at Excel With Openpyxl

Module 2.3: Copy Row,Columns,Page from 1 Excel File to Another With Openpyxl

Module 2.4: Seperate & Save Each Page of Excel File As New Excel WorkBooks With Xlwing

Module 2.5: Merge Individual Excel Workbooks into One New Workbook As Pages at Excel With Openpyxl

Module 2.6: Introduction to Netmiko (SSH with Python)

Module 2.7: Introduction to TextFSM (Parsing Data Output From Network Devices )

Module 2.8: Configure Multiple Devices With Netmiko Via JSON (devices.json, config.json, for loop with try & except)

Module 2.9: Gather Serial Numbers With Netmiko & TextFSM From TXT File (devices.txt, for loop with try & except)

Module 2.10: Gather Serial Numbers With Netmiko & TextFSM From Excel File (devices.xlsx, for loop with try & except)

Module 2.11: Configure Multiple Network Devices With Txt file (Static Config)

Module 2.12: Gather Backup Config from Multiple Network Devices With Multi-Threading and Netmiko (Threading: From each device at the same time)

Module 2.13: NTC Template with Netmiko (Parsing Data Output From Network Devices )

Module 2.14: Configuration Cloning with TextFSM and Netmiko (Clone router loopback config info into another router)

Module 2.15: Create Custom Parser With TTP File (Parsing data output from network devices with your own custom parser file)

**Part 3: Developing AI ChatBot For Network Automation**

Module 3: Developing AI ChatBot For Network Automation

Module 3.1: TTP Parser API

Module 3.2: Upload Network Topology & Get Feedback From AI Chatbot

Module 3.3: Generating Network Automation Codes From Text With AI Chatbot

Module 3.4: Testing Network Automation Codes With AI Chatbot

Module 3.5: Executing Network Automation Codes With AI Chatbot

Module 3.6: Parsing Output Data From Network Devices With AI Chatbot

**3.Developing AI Models For Network Management**

**Eğitim Kapsamı:**

-Makine Öğrenme Denetimli Öğrenme: Linear, Polynomial, Multiple Regresyonlar  
-Makine Öğrenme Denetimli Öğrenme: Lojistik Regresyonlar  
-Lojistik Regresyon ile İzinsiz Ağ Girişi Tespiti  
-Makine Öğrenme Denetimsiz Öğrenme: RFM Analizi/Hierarchical Clustering/Customer Segmentation  
-Derin Öğrenme Yapay Sinir Ağları  
-Multiple EarlyStop Callback  
-Multiple EarlyStop Callback Yapay Sinir Ağları ile İzinsiz Ağ Girişi Tespiti  
-Yapay Sinir Ağları Multiple Text Classification  
-Yapay Sinir Ağı ChatBot'un Network Otomasyonda Kullanılması  
-Tekrarlamalı Sinir Ağları  
-Long Short Term Memory & Zaman Serileri  
-LSTM ve Zaman Serileri ile Anomaly Tespiti  
-Generative AI

Not: Anomaly Detection With Python eğitimini almak için çok iyi Python ile Veri Bilimi bilmek gerekmektedir.

Duration: 5 Days / 35 Hours

Course Prerequisites:

-Attending Knowledge Club Python Programming Course

-Attending Knowledge Club Network Visualization With Data Science

Course Purpose: The purpose of this course:

-is teaching the students how to use artificial intelligence solutions for network automation.

Course Summary:

Part 1: Machine Learning With Python

Part 2: Deep Learning With Python

Part 3: Generative AI With Python

Course Index:

**Part 1: Machine Learning With Python**

Module 1.1: What is Machine Learning

Module 1.2: Machine Learning Methods

Module 1.3: Supervised Machine Learning Regression Introduction

Module 1.4: Advertisement Dataset Multiple Linear Regression

Module 1.5: Advertisement Dataset Polynomial Regression

Module 1.6: How to Save Data Model and Load

Module 1.7: Cross Validation & Lasso

Module 1.8: Standard Scaler

Module 1.9: Label Encoding & Logistic Regression

Module 1.10: Network Intrusion Detection With Logistic Regression

Module 1.11: 1 Unsupervised Learning

Module 1.12: RFM Analysis With Hierarchical Clustering/Customer Segmentation

**Part 2: Deep Learning With Python**

Module 2.1: Introduction To Deep Learning

Module 2.2: What is Neural Network ?

Module 2.3: What is Deep Nerural Network ?

Module 2.4: How to Design Deep Neural Network ?

Module 2.5: Artificial Neural Networks

Module 2.6: Numerical Data ANN

Module 2.7: Binary Classification ANN

Module 2.8: Multiple Classification & One Hot Encoder ANN

Module 2.9: Early Stop Callback

Module 2.10: Multiple Early Stop CallBacks

Module 2.11: Numerical Data & Binary/Multiple Classification ANN Project With Multiple Early Stop CallBacks

Module 2.12: Network Intrusion Detection With ANN

Module 2.13: Mulliple Text Classification

Module 2.14: ANN ChatBot

Module 2.15: ANN ChatBot With Flask & HTML (Backend & Front End)

Module 2.16: Network Automation With ANN ChatBot API

Module 2.17: RNN

Module 2.18: Long Short Term Memory & Time Series

Module 2.19: Stock Market Prediction With LSTM

Module 2.20 Anomaly Detection With LSTM

**Part 3: Generative AI With Python**

Module 5.1: Text Generation From Text

Module 5.2: Sentimental Analysis

Module 5.3: Code Generation From Text

Module 5.4: Intention Analysis

Sorularınız olursa dilediğiniz zaman bana ulaşabilirsiniz 😊

**Betül Karaduman**