Deep Learning in Artificial Intelligence: Final Portfolio

Image and Video Recognition

Speech Recognition

Predictive Analytics

Fraud Detection

Natural Language Processing

Supply Chain Optimization

Recommendation System

Medical Diagnosis

Maira Tanweer Chachar

Leewayhertz

Module 1 - Module 5

Learning Points:
- Introduction to Deep Learning
- Deep Learning Environments, Libraries, and Tools
- Neural Network Basics
- Daniel Bourke Video on Code-First TensorFlow
- Convolutional Neural Networks
- Image Classification with Deep CNNs
- Wordtransformers for Image Recognition at Scale
- Introduction to Computer Vision
- Sequence Modeling
- NLP with RNNs
- Word Embeddings vs TFIDF
- Word2Vec
- BERT

Assignments:
- A02 A Comparative Analysis of Machine Learning and Deep Learning Tools and Frameworks
- A03 Neural Network Zoo
- A04 ITAI 2376 Deep Learning for an 11 year old

Module 6 - Module 10

Learning Points:
- Transformer Architecture and Applications
- Transformer Models
- ViT Vision Transformer
- Transformer Self-Adaptive LLMs
- Linear-Time Sequence Modeling with Selective Spaces
- Hallucination Mitigation Techniques in LLMs
- Variational Auto Encoders VAEs
- Transposed Convolutions
- AutoEncoder AE vs Variational AutoEncoder VAE
- GANs
- U-Net Convolutional Networks
- Generative AI with Diffusion Models
- Diffusion Models in Various Fields
- Deep Fakes
- Reinforcement Learning and AI Agents

Assignments:
- Mid Term: Creating Images with Diffusion Models

Module 11 – Module 14

Learning Points:

Reasoning Models, Agents and LLMs

LlamaIndex

AI RAG IBM

Prompt Engineering Techniques

Switch Integrate Reasoning

Generalisation Gaps

Self Correction in LLMs

Vector Database

Agent Planning and Orchestration

Multi Agent Systems and Applications

Assignments:

- Final Submission: Portfolio
- Final Project: AI Agent Creation

Thank You

Repository:https://github.com/PentaXI
V/6253-ITAI-2376-Deep-Learning-
Artificial-Intel-S10-14724