Computer Vision Projects

Instructors:

Sourangshu Pal:

Visual Computing Engineer and instructor at iNeuron.ai having 3 years of diverse experience in the discipline of visual computing with specialization in Deep Learning and Computer Graphics. Loves to analyze, process, and model visual data then interpret the insights to create actionable plans for solving challenging business problems.

Curriculum:

Introduction to Course

• Inroduction to the course Preview

• Course Curriculum

• Installing Software and Applications

• Working with Anaconda environments

• Pycharm introduction

• Pycharm with conda

• Pycharm with venv

• Pycharm with pipenv

Covering Python Basics

• Building a calculator part Preview

• Working with command line arguments

• Building the Flask Application

• Testing our app in Postman

• Learn to debug with Pycharm

• Adding an UI to our Web App

Intro to Object detection

• What is Object Detection? Preview

• What are Bounding boxes?

• Applications of Object detection

• Metrics used in Object detection

Practicals Object Detection using Tensorflow 1x

• Introduction to TFOD1.x

• Using Google colab with Google drive

• Installation of Libraries in colab

• TFOD 1.x setup in colab

• Visiting the Model Zoo

• Inferencing in Colab

• Inferencing in Local

• Important Configuration Files

• Webcam Testing

Practicals Training a Custom Cards Detector using Tensorflow1x

• Custom model training in TFOD 1.x

• Our custom dataset

• Doing Annotations or labeling data

• Selection of pretrained model from Model zoo

• Files setup for training

• Let's start Training in Colab

• Export Frozen inference graph

• Inferencing with our trained model in Colab

• Training in Local

• Inferencing with our trained model in Local

Practicals Creating an Cards Detector Web App with TFOD1

• Creating a Pycharm project & Environment Setup

• WebApp workflow

• Code Understanding

• Prediction with Postman

• Debugging our Application

Practicals Object Detection using Tensorflow 2x

• Introduction to TFOD2.x

• Using the default colab notebook

• Google colab & Drive setup

• Visting TFOD2.x Model garden

• Inference using Pretrained model

Inferencing in Local with a pretrained model

• Custom model training in TFOD 2.x

• Our custom datset

• File setup for training

• Let'S start training

• Stop training or resume training

• Evaluating the trained model

• Convert CKPT to saved model

• Inferencing using the custom trained model in colab

• Inferencing using the custom trained model in local PC

Practicals Training a Custom Chess Piece Detector using Tensorflow2

• Creating a pycharm project & environment setup

• Application workflow

• Code understanding

• Testing our app with postman

• Debugging our application

Practicals creating an chess piece detector web app with TFOD2

• Introduction to detectron2

• Detectron2 colab setup

• Visiting detectron2 model zoo

• Detectron2 pretrained model inferencing

Practicals object detection using detectron2

• Detectron2 custom training

• Exploring the dataset

• Registering dataset for training

• Let'S start training

• Inferencing using the custom trained model in colab

• Evaluating the model

Practicals training a custom detector using detectron2

• Creating a pycharm project & environment setup

• Application workflow

• Code understanding

• Testing our app with postman

• Debugging our application

Practicals creating an custom detector web app with detectron2

• Introduction to yolov5

• Yolov5 colab setup

• Inferencing using pre trained model

Practicals object detection using yolov5

• Custom training with yolov5

• Exploring the dataset

• Doing annotations or labeling data

• Setting up google colab & drive

• Let'S start training

• Inferencing using the custom trained model in colab

Practicals training a custom warehouse apparel detector using yolov5

• Creating a pycharm project & environment setup

• Application workflow

• Code understanding

• Testing our app with postman

• Debugging our application

Practicals creating an warehouse apparel detector web app with YOLOV5

• Introduction to vehicle detection project

• Requirement gathering

• Framework selection

• Detailed project workflow

• Data collection

• Data preparation

• Data augmentaion

• Data annotations

• Model training

• Creating a pycharm project & environment setup

• Webapp workflow

• Code understanding

• Prediction with postman

• Debugging our application

Traffic vehicle detection

• Object tracking project

• Project installation

• Project demo

• Code understanding

Object tracking with detection

• Introduction to helmet detection project

• Requirement gathering

• Techstack selection

• Detailed project workflow

• Data collection

• Data preparation

• Data augmentaion

• Data annotations

• Model training

• Creating a pycharm project & environment setup

• Webapp workflow

• Code understanding

• Prediction with postman

• Debugging our application

Helmet detection

• Introduction to fashion apparel detection project

• Requirement gathering

• Techstack selection

• Detailed project workflow

• Data collection

• Data preparation

• Data augmentaion

• Data annotations

• Model training

• Creating a pycharm project & environment setup

• Project demo

• Webapp workflow

• Code understanding

• Prediction with postman

• Debugging our application

Fashion apparel detection

• Introduction to project

• Project installation

• Project demo

• Application Workflow

• Code Understanding

• Debugging our App

• Different OCR's available

Image TO text OCR

• Introduction to Project

• Requirement Gathering

• Techstack Selection

• Project Installation

• Project Demo

• Project Workflow

• Core Components of the Application

• Data Collection Module

• Generate Face Embeddings

• Training Face Recogniton Module

• Prediction Pipeline

• Entrypoint of the Application

• Application Workflow

Vision based attendance system

• Introduction to Shredder Systems

• Requirement Gathering

• Techstack Selection

• Data Collection

• Data Augmentation

• Data Preparation

• Data Annotation

• Model Selection from Zoo

• Model Training

• Creating a Pycharm project & Environment Setup

• Application Workflow

• Project Demo

• Code Understanding

• Debugging our Application

• Project Workflow

Shredder System

• Introduction to ANPR Project

• Requirement Gathering

• Tech Stack Selection

• Project Workflow

• Data Collection

• Data Augmentation

• Data Preparation

• Data Annotation

• Model Selection From Zoo

• Model Training

• Creating a Pycharm project & Environment Setup

• Application Workflow

• Create Google OCR API Key

• Project Demo

• Code Understanding

• Debugging our Application

Automatic Number plate Recognition with TFOD1x