YOLOv4 PRO Curricullum - Windows

Module 1 :			**Introduction**	
	Lecture 1	Lecture	Introduction to the Course	
	Activity 1	Activity	Activity - Lets Get Acquainted	
	Lecture 2	Lecture	YOLOv4 Theory	
	Activity 2	Activity	Activity	
Module 2 :			**Object Detection with YOLOv4**	
	Lecture 3	Lecture	Introduction	Differences of Objects Detection on image, video and in real time with camera.
	Lecture 4	Lecture	Installations of CUDA, Python, OpenCV etc…	How install all the dependencies
	Lecture 5	Lecture	YOLOv4 Object Detection on Images and Video	Use yolo V4 to detect on an image
	Activity 3	Activity	Activity - Detect Objects on Image	
	Lecture 6	Lecture	YOLOv4 Darknet explaination with Code and Webcam Implementation	Display video in real time Process and Save and Webcam
	Activity 4	Activity	Activity - Detect objects on Video	
App1 -	Lecture 7	Lecture	Social Distancing App	See whos close to each other.
App2 -	Lecture 8	Lecture	Count parked cars	How to count cars in parking lot from top down.
App3 -	Lecture 9	Lecture	Tracking Yolo4	Tracking with YOLOv4
	Lecture 10	Lecture	Summary: Key takeaways for object detection	
			Quiz	
Module 3 (Module 1 for trainers course)			**Labelling a New Dataset in YOLOv4 format**	**Creating dataset from scratch into YOLOv4 format**
	Lecture 1	Lecture	Data Annotation Introduction	Why do we need data annotation techniques?
	Lecture 2	Lecture	YOLOv4 labbelling format looks like?	Representation of image in YOLO format.
	Lecture 3	Lecture	Useful resources for labelling	Overview of different useful and free resources for labelling.
	Lecture 4	Lecture	Labelling Image in YOLOv4 format	Step-by-step instructions on how to use labelling tool and save results.
	Activity 1	Activity	Activity - label object on image.	
	Lecture 5	Lecture	Labelling Video in YOLOv4 format	Step-by-step instructions on how to get set of images from video and label them.
	Activity 2	Activity	Activity - label object on video.	Download video and implement labelling of the Objects on it.
	Lecture 6	Lecture	Parameters for training	What parameters are neccesary to set.
	Lecture 7	Lecture	Quiz	
	Lecture 8	Lecture	Summary: Key takeaways for labelling data	
Module 4 (Module 2 for trainers course)			**Creating custom Dataset in YOLOv4 format**	**Modifying exisitng dataset into YOLOv4 format**
	Lecture 9	Lecture	Introduction: How to create custom dataset?	How to use huge existing dataset to create custom one.
	Lecture 10	Lecture	Downloading images from huge dataset	By using toolkit, downloading needed images from huge dataset.
	Activity 3	Activity	Activity: Download Images for these classes	
	Lecture 11	Lecture	Converting downloaded files to YOLO format	Writing code for converting annotations for downloaded images into YOLO format.
	Lecture 12	Lecture	Data Augmentation	How to multiply your dataset with data augmentation
	Activity 4	Activity	Activity	
	Lecture 13	Lecture	Summary: Key takeaways for custom data	
Module 5 (Module 3 for trainers course)			**Training YOLOv4 in darknet/pytorch? framework**	**How to train YoloV4**
	Lecture 14	Lecture	Introduction - to training process	Dataset - Part of Smoothie bot dataset - I have permission from Jasmine
	Lecture 15	Lecture	Installing dependencies	Step-by-step instructions on how to install dependencies for training
	Lecture 16	Lecture	Preparing files for training	Preparing needed files to train in Darknet framework for custom datasets.
	Lecture 17	Lecture	Setting up configuration files	Adjusting configuration files for training and testing with custom datasets in Darknet framework.
	Lecture 18	Lecture	Running the training process	Step-by-step instructions on how to run training process in Darknet framework.
	Lecture 19	Lecture	When do we stop training	Tips on how to define optimal number of iterations for training in Darknet framework.
	Activity 5	Activity	Activity - Test trained custom model on images	Download images, weights and implement Objects Detection by using trained weights and cfg file for testing YOLO v4.
	Activity 6	Activity	Activity - Test trained custom model on images	Download videos and implement Objects Detection by using trained weights and cfg file for testing YOLO v4.

App 4 -	Lecture 20	Lecture	Facial Mask Detection -	
	Activity 7	Activity	Activity	
	Lecture 21	Lecture	Summary - Key Takeawys	
Module 6 (Module 1 for PyQT course)			**PyQT user interface for Object Detection with YOLOv4**	**Step-by-step instructions on how to install PyQt for building GUI.**
	Lecture 1	Lecture	Instaling PyQT for building UI	Step-by-step instructions on how to create PyQt GUI.
	Lecture 2	Lecture	Creating PyQT interface	Step-by-step instructions on how to integrate YOLO v4 into created PyQt GUI.
	Lecture 3	Lecture	Integrating YOLOv4 and PyQT interface	Testing PyQt GUI for Objects Detection with YOLO v4.
	Lecture 4	Lecture	Test Run with PyQT interface for object detection	Test run of
	Lecture 5	Lecture	People Counting - Social Distancing	Calculate the distance between people in crowd and say if they are too close.
	Lecture 6	Lecture	Mask Detection GUI	Show graph over time, Discuss with Ritesh on possible ways to make it interesting
	Lecture 7	Lecture	Car Tracking with Deep Sort	Track Cars with Deep Sprt
	Lecture 8	Lecture	Conclusion	
	Activity 1	Activity	Activity	
	Lecture 9	Lecture	Summary	
	Lecture 10	Lecture	Bonus Lecture	
Bonus			**YOLOv5 Chess Piece Detection**	**YOLOv5 tutorial in Google Colab**

OpenCV AI Kit App Development Curricullum - Raspberry Pi

Section 1		**Introduction to OAK**	
	Lecture 1	Introduction to the Course	Coming Soon
	Lecture 2	OAK Capabilities	
	Lecture 3	Myriad X and Compute Capacity	
	Lecture 4	Hardware Layout	
	Lecture 5	Pretrained Model Zoo Overview	
Section 2		**Getting Started on Windows/Ubuntu**	
	Lecture 2	Installation of OAK and Dependencies	
	Lecture 3	Running Your First Object Detector	
Section 3		**Getting Started on Rpi**	
	Lecture 1	Installation of OAK and Dependencies	
	Lecture 2	Running Your First Object Detector	
	Lecture 3	App1 - Secuity Camera - Light up LED	
	Lecture 4	App2 - Social Distance Send Alert	
	Lecture 5	App3 - Mask Detector Allow Person through gate	
	Lecture 6	App4 - Pan Tilt Tracking Camera	
	Lecture 7	App5 - Push Up Detection using Pose Estimation	Coming Soon
	Lecture 8	App6 - Autonomous Drone Tracking	Coming Soon
Section 4		**Training**	
	Lecture 1	Introduction to Training	Coming Soon
	Lecture 2	How to train object detection	Coming Soon
	Lecture 3	How to Train Segmentation	Coming Soon
		Conclusion	Coming Soon

SiamMask PRO

Section 1		**Introduction to Siam Mask**
	Lecture 1	How to take this Course.
	Lecture 2	Object Tracking Intro

	Lecture 3	Single and Multi-Object Video Object Tracking
	Lecture 4	Object Segmentation
	Lecture 5	Siam Mask Object Segmentation Tracking
	Lecture 6	Siam Mask Course Overview
	Lecture 7	How does Siam Mask Work Intro
	Lecture 8	Fully Convolutional Siamese Network
	Lecture 9	Fully Convolutional Siamese Network Overview
	Lecture 10	SiamFC and Siam RPN
	Lecture 11	Siam Mask
	Lecture 12	Implementation Details
	Lecture 13	Siam Mask Performance
	Lecture 14	Results of Siam Mask
Section 2		**SaimMask Setup and Implementation**
	Lecture 1	Environmental Setup Intro
	Lecture 2	What you will Need
	Lecture 3	Setup and GitHub Code
	Lecture 4	Anaconda Setup
	Lecture 5	Setup Python Environment
	Lecture 6	Running the Demo
	Lecture 7	Demo Analysis
	Lecture 8	Key Take-away
	Lecture 9	Using your Own Dataset Intro
	Lecture 10	Siam Mask Execution Commands
	Lecture 11	Converting the Dataset into Images
	Lecture 12	Running the Demo on your own Dataset
	Lecture 13	Activity - Test it on your own video
Section 3		**Training Dataset Preparation**
		Module 5 - Preparing your Data for Training
	Lecture 1	Training Datasets Overview
	Lecture 2	YouTube VOS Dataset
	Lecture 3	COCO Dataset
	Lecture 4	ImageNet Datasets
	Lecture 5	YouTube VOS Training Dataset Process
	Lecture 6	Step 1 - Using the Correct Directory
	Lecture 7	Step 2 - Downloading the Raw Image Dataset
	Lecture 8	Annotation Metafile Format Review
	Lecture 9	Dataset Post Processing
	Lecture 10	Step 3 - Crop and Generate Data Info
	Lecture 11	Convert Raw Data to Summarised Training format
	Lecture 12	How to Repeat for Other Datasets
	Lecture 13	Activity - Try Out your Own Datasets
Section 4		**Training & Testing Siam Mask**
	Lecture 1	Intro to Siam Mask Training
	Lecture 2	Why Use Test Data
	Lecture 3	Step 0 - Downloading Test Data
	Lecture 4	Step 1 - Download the Pre-trained Model
	Lecture 5	Step 2 - Training Siam Mask Base Model
	Lecture 6	Post-Training Checkpoints
	Lecture 7	Overview of Checkpoint Testing
	Lecture 8	Activity - Train you own Dataset
	Lecture 9	Testing SiamMask Intro
	Lecture 10	Various Options for Testing SiamMask
	Lecture 11	Option 1 - Testing Checkpoints on VOT
	Lecture 12	Option 2 - Best Model for Hyperparametric Search
	Lecture 13	Option 3 - Tracking on your Own Dataset
	Lecture 14	Siam Mask Custom Model Testing Summary

Section 5		**Error Handling**
	Lecture 1	A1-Error Handling - jitdebug
	Lecture 2	A2-Error Handling - CUDA
	Lecture 3	A3-Error Handling - NoneType
	Lecture 4	A4-Error Handling - Checkpoint e9
	Lecture 5	A5-Error Handling - jq- command not found
	Lecture 6	A6-Error Handling - NAN FPS

Mask R-CNN - Robust Deep Learning Segmentation in 1 hour

Section 1		**Introduction**
	Lecture 1	Introduction to Mask R-CNN
	Lecture 2	How to take this course.
	Lecture 3	Mask R-CNN Intuition
	Lecture 4	Test your Might - Mask R-CNN
Section 2		**Setup of Mask RCNN**
	Lecture 1	Anaconda Install and Setup for Mask RCNN
	Lecture 2	Installing the requirements, dependencies
Section 3		**Mask RCNN Implementation**
	Lecture 1	Real-time Mask RCNN - How to execute like a boss.
Section 4		**Training Mask RCNN**
	Lecture 1	Set up Supervisely Cluster
	Lecture 2	Getting Help with Supervisely
	Lecture 3	Annotating Images
	Lecture 4	Data Augmentation
	Lecture 5	How to Train a Mask RCNN model
Section 5		**Deploying Mask-RCNN**
	Lecture 1	How to Deploy a Custom Mask RCNN after Training
	Lecture 2	Segmentation Area Analysis - How to Count Potholes and its Area Size
Section 6		**Conclusion to the Course**
	Lecture 1	Where to go from here? [BONUS]

Pose Estimation Development using OpenPose Framework

Section 1		**Welcome to the Pose Estimation**
	Lecture 1	Introduction to the Course
	Lecture 2	How to Join the Private FB Group
	Lecture 3	How to take this Course
	Lecture 4	Open Pose Intuition & How it Works
	Lecture 5	Github Repository
	Lecture 6	Tensorflow and Setup Troubleshooting
	Lecture 7	Setup & Execution of Pose Estimation
Section 2		**App Development with AI Pose Estimation**
	Lecture 1	App 1 - People Counter using Open Pose
	Lecture 2	App 2 - Fall Detection
	Lecture 3	App 3 - Yoga Pose Angle Corrector
	Lecture 4	App 4 - Planking/Push up Detector

	Lecture 5	App 5 - Body Ratio Calculator	
	Lecture 6	App 6 - OpenPose in Unity [UPDATED!!]	
Section 3		**Course Conclusion & Bonus Section**	
	Lecture 1	Where to go from here? [BONUS]	
	Lecture 2	Convolutional Neural Networks	
	Lecture 3	Artificial Neural Networks	

Detectron2

Section 1		**Introduction**	
	Lecture 1	Back to Basics	
	Lecture 2	Detectron 2: What?	
	Lecture 3	Detectron 2: Why?	
	Lecture 4	Detectron 2: How?	
Section 2		**Installation**	
	Lecture 1	Detectron 2 Requirements	
	Lecture 2	Download & Install Anaconda	
	Lecture 3	Download & Install CUDA	
	Lecture 4	Start Anaconda	
	Lecture 5	Install Pytorch	
	Lecture 6	Install Cython	
	Lecture 7	Install Pycocotools	
	Lecture 8	Install Detectron 2	
	Lecture 9	Install VC_redist.x64.exe	
	Lecture 10	Install Detectron 2 from Anaconda Promt	
	Lecture 11	Install OpenCV	
	Lecture 12	Test all the Installation	
	Lecture 13	Google Collab for Detectron 2	
	Lecture 14	Results	
Section 3		**How to Execute Detectron 2**	
Section 4		**Training Detectron 2**	Coming Soon
Section 5		**Developing Real-world Applications with Detectron2**	Coming Soon

BONUS Courses

Project E.D.I.T.H. AI Smart Glasses

Section 1		**Introduction to the Course**	
	Lecture 1	Introduction	
	Lecture 2	Course Requirements	
	Lecture 3	How to Join the Private FB Group	
Section 2		**Project EDITH Smart Glasses Core Module**	
	Lecture 1	Phase 1 - Face Detection	
	Lecture 2	Phase 2 - Multiple Face Recognition	
	Lecture 3	Phase 3 - Object Detection	
	Lecture 4	Phase 4 - J.A.R.V.I.S. and E.D.I.T.H. AI Voice Assistant	
	Lecture 5	Phase 5 - Fuse AI with IoT with AR (AI+IoT+AR)	
	Lecture 6	Phase 6 - Android AI Solution	

	Lecture 7	Phase 7 - nReal Glasses Intergration [Coming Soon]
Section 3		**Conclusion**
	Lecture 1	Where to from Here?
Section 4		**Bonus Section**
	Lecture 1	Artificial Neural Networks - Theory
	Lecture 2	Convolutional Neural Networks - Theory

YOLO v3 - Robust Deep Learning Object Detection in 1 hour

Section 1		**Introduction to Yolo V3 Object Detection**
	Lecture 1	Introduction
	Lecture 2	How to Join the Private FB Group
	Lecture 3	How to take this course
Section 2		**The Quickest Way to get YoloV3 up and Running!**
	Lecture 1	Yolo v3 Intuition
	Lecture 2	Execute Yolo V3
	Lecture 3	How to Train Yolo V3 - Training & Workflow
	Lecture 4	4 Steps to Setting up a Supervisely Deep Learning Cluster
Section 3		**How to Web Scrape Images for your Dataset like a PRO!**
	Lecture 1	The Best Way to Annotate your Dataset
	Lecture 2	How to let the AI Annotate your Dataset for you - Human in the Loop Annotation
	Lecture 3	Got Little Data? No Problem! Data Augmentation to the Rescue ;)
	Lecture 4	How to Train a Yolo V3 Network
	Lecture 5	A Quick and Easy Method Deploying your Custom Object Detector after Training
Section 4		**Post-Processing and Maintenance**
	Lecture 1	How to Record video, change bounding box color and add confidence percentage
	Lecture 2	Cleaning up you Supervisely Cluster and Cluster Maintenance
Section 5		**Bonus Lecture**
	Lecture 1	Artificial Neural Networks
	Lecture 2	Convolutional Neural Networks

Neural Networks Fundamentals

Section 1		**Neural Networks Fundamentals-Course**
	Lecture 1	Introduction to Artificial Neural Networks (ANN)
	Lecture 2	ANN Quiz
	Lecture 3	Recurrent Neural Networks LSTMs and Vanishing & Exploding Gradients
	Lecture 4	Convolutional Neural Networks
Section 2		**YOLO - You Only Look Once**
	Lecture 1	YOLOv1 - v3 Theory
	Lecture 2	YOLOv4 Theory
	Lecture 3	YOLOv4 Quiz
Section 3		**Mask R-CNN**
	Lecture 1	Mask R-CNN Tutorial
	Lecture 2	Mask R-CNN Quiz

Section 4		**OpenPose Pose Estimation**
	Lecture 1	Open Pose Intuition
Section 5		**Where to go from here**
	Lecture 1	Resources

Chess Piece Detection - YOLOv5

Section 1		**Chess Piece Detection**
	Lecture 1	Introduction
	Lecture 2	Dataset
	Lecture 3	Dataset Health Checker
	Lecture 4	Exporting the Dataset
	Lecture 5	AutoML Train
	Lecture 6	After Training
	Lecture 7	Host Web API - Inference
	Lecture 8	Colab
	Lecture 9	CollabTest
	Lecture 10	Conclution

Face Recognition Attendance GUI in PyQt

Section 1		**Face Recognition Attendance GUI in PyQt**
	Lecture 1	Introduction
	Lecture 2	Outline
	Lecture 3	Game Plan
	Lecture 4	Functionality
	Lecture 5	Downloading the Base app
	Lecture 6	Coding
	Lecture 7	Test
	Lecture 8	Result

Accelerate Deep Learning on Raspberry Pi

Section 1		**Introduction to the Course**
	Lecture 1	Introduction to the Course
	Lecture 2	Hardware Requirements for Deep Learning
	Lecture 3	How to take this course
	Lecture 4	Frequently Asked Question
Section 2		**The Super Simple Way to Get Started with Raspberry Pi**
	Lecture 1	How to Install Raspbian Operating System on Raspberry Pi
	Lecture 2	Optional - Headless Raspberry Pi setup
	Lecture 3	Initial Raspbian OS Setup on Raspberry PI
	Lecture 4	4 Raspberry Pi/Linux Scripting Tricks
Section 3		**Deep Learning Fundamentals (theory)**
	Lecture 1	Multilayer Perceptron - Artificial Neural Network (theory)
	Lecture 2	Convolutional Neural Network (Theory)
	Lecture 3	Nomenclature
Section 4		**Object Detection Models that AI Engineers Use**

	Lecture 1	Tensorflow lite introduction and ARM Machine learning
	Lecture 2	Top 3 Object Detection Models
Section 5		**Object Detection using Intel Movidius Neural Compute Stick**
	Lecture 1	Movidius install on Raspberry Pi
	Lecture 2	How to use Movidius NCAppZoo
	Lecture 3	What is Darkflow and How to Install It
	Lecture 4	Setting up and Testing YOLO
	Lecture 5	Setup GUI and VNC
	Lecture 6	Implementing Mobilenet SSD
	Lecture 7	[BONUS] How to Detect Age and Gender on Camera
Section 6		**Bonus: CPU Interfence and Model training**
	Lecture 1	OpenCV CPU inference
	Lecture 2	Introduction how to train a model on custom objects
	Lecture 3	[BONUS] Recurrent Neural Networks (Theory)
	Lecture 4	Cool Resources for Students
	Lecture 5	[NEW] XR Developers Podcast with Ritesh Kanjee