**Computer Vision**

1. **Basic Programming Language:**

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| Content | Remark |
| Python | With advance usage of library and functions |

1. **Basic Of Computer Vision:**

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| Content | Remark |
| Introduction to computer vision | What computer vision is |
| Introduction to images | How an image is Formed |
| Basic image operations | What operations you can do on an image |
| Mathematical operations on images | What math can do to an image |
| Image Annotation | What is annotation |
| Binary Image Processing | How an image is processed in binary |
| Image Enhancement and Filtering | Color Spaces, Color Transforms, Image Filtering, Image Smoothing, Image Gradients |
| Geometric Transforms and Image Features | Geometric Transforms, Image Features, Feature Matching |
| Image Segmentation | What is segmentation |
| Image Classification | What is classification |
| Object Detection | What is object detection |
| Video Analysis | What is frame in a video |

1. **Library Of Computer Vision:**

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| Content | Remark |
| Scikit-learn | Not mandatory |
| OpenCV | What are the usage of OpenCV |
| Pytorch/Tensorflow | What is Pytorch/Tensorflow. What are the usages |
| NumPy | What is NumPy. What are the usage |
| Matplotlib | What is Matplotlib. What are the usage |
| Pandas | What is Pandas. What are the usage |
| PIL(Python Imaging Library) | What is PIL. What are the usage |
| SciPy | What is SciPy. What are the usage |

1. **Practice Small Project:**

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| Content | Remark |
| Image Processing Tools using TkInter/Flask | Gary, Brightness, Color Space Change, Crop, Image Resolution Change |
| Colors detection | Detect different color objects |
| Object tracking | Tracking objects from image and video |
| Traffic light detection | Detect the state of a traffic light |

1. **Learn Deep Learning:**

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| Content | Remark |
| Supervise learning | What is Supervise learning |
| **Unsupervised learning** | What is **Unsupervised** learning |
| Regression | What is Regression |
| Classification | What is Classification |
| Overfitting | What is Overfitting |
| Underfitting | What is Underfitting |
| Accuracy Metrics | What is Accuracy Metrics |
| Visualization | What is Visualization |
| NN (Neural Network) | Neuron, Weights, Bias, Activation Function, Loss Function, Input/output/Hidden Layer, MLP(Multi-Layer perceptron), Cost Function, Gradient Descent, Learning Rate, Backpropagation, Batches, Epochs, Dropout, Normalization, Data Augmentation |
| ANN (Artificial Neural Network) |  |
| CNN (Convolutional Neural Network) | Filters, Pooling, Padding, Stride, Kernel |
| RNN (Recurrent neural network) |  |
| Advance Mathematical Concept for Computer Vision | Statistics, Linear Algebra, Differential Calculus, Probability theory, Signal processing |

1. **Practice Large Project:**

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| Content | Remark |
| Hand gesture recognition | Recognize the different hand gesture |
| Human emotion recognition | Detect if a person is happy, sad or else |
| License plate recognition | License Plate detection and OCR |
| Face mask detection | Detect if one have mask on or not |