Computer Vision

1. **Basic Programming Language:**

Content	Remark
Python	With advance usage of library and functions

2. **Basic Of Computer Vision:**

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

3. Library Of Computer Vision:

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

4. Practice Small Project:

Content	Remark
Image Processing Tools using TkInter	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

5. **Learn Deep Learning:**

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

6. **Practice Large Project:**

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