

# Artificial Intelligence

**40** Hours  
Session

**03** Levels to Mastery  
over AI

Artificial Intelligence (AI) is a field that has a long and interesting history. It is constantly and actively evolving. In this course, you will learn the basics of modern-time AI and representative applications of it. Uncover the numerous methods to apply AI and possible developments. Come expand human capability beyond your imagination.

Codevidhya's Artificial Intelligence 40-Hour session will enable you to make active AI models that can be shared with anyone, anywhere. From facial recognition, to sound classification, to position estimation and gaming - Create the intelligence of the future with us. Act now.

"I have always been convinced that the only way to get artificial intelligence to work is to do the computation in a way similar to the human brain. That is the goal I have been pursuing. We are making progress, though we still have lots to learn about how the brain actually works."

- Geoffrey Hinton, Famous AI Scientist



LEVEL 01

BEGINNER



# INTRODUCTION TO AI AND JAVASCRIPT



Course Duration  
**08 Hours**



Session  
**01 - 08**



## Learning Outcome

- Understanding of basics and foundations of machine learning
- Ability to incorporate the tools required to develop ML Model
- Understanding of differences between ML and conventional AI
- Creation of your own AI-powered game

### Session

### Curriculum

### Outcome

01

Installation, What is AI and Machine Learning

Getting the essence of Machine Learning Tools required to make a ML Program

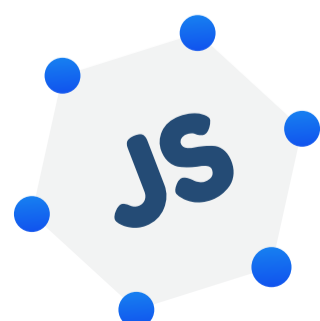
02

Basics of JavaScript Programming Language

Knowing JavaScript as out Programming Language; Datatypes, Operators

03

Basics of JavaScript

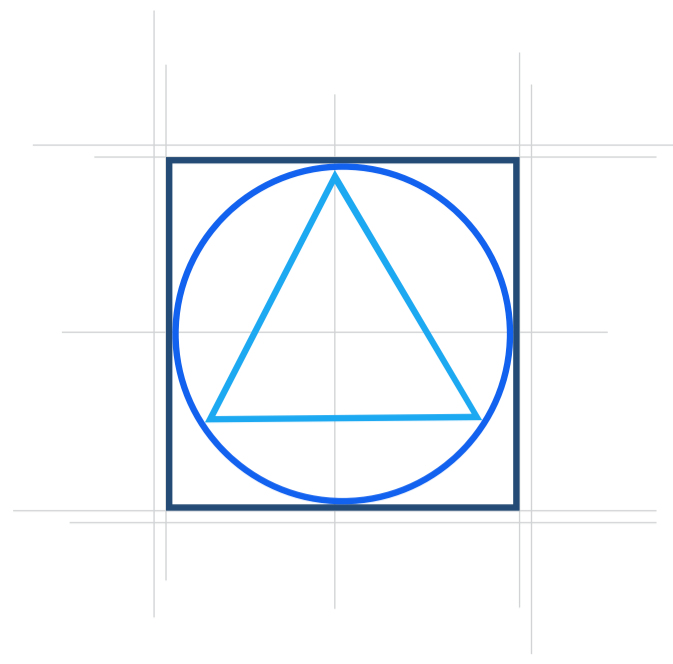


Functions, Constructors, Flow Statements



04

P5.js  
Shapes



Setting up an Online Editor for p5 Library  
Knowing the basics of p5.  
Making Basic Shapes

05

P5.js Colors

Adding Colors, Interactivity and more options using the p5 Library

06

How Machine Learning Works

Insights of a ML Model and Flow of a general ML Code

07

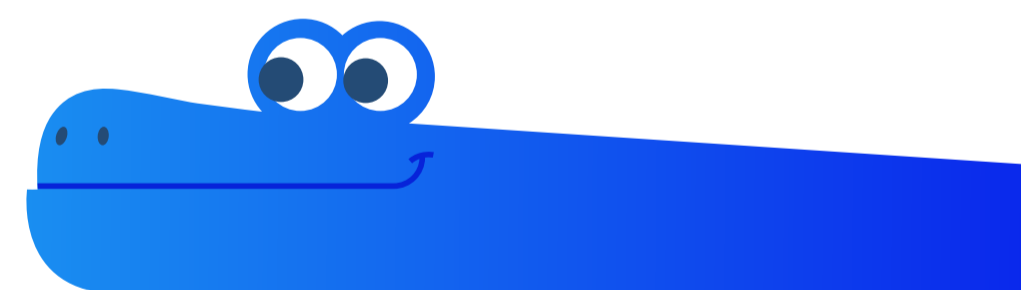
Snake Game with P5.js

Making a fully functional Classical Snake Game using p5

08

Teachable Machine, AI powered Snake Game

Learning about the Google's Teachable Machine and making a ML model using it  
Importing that Model into our Project and making a AI powered Snake Game



## Skill Benefits

- Enhanced Mental Skills
- Enhanced Creativity Skills
- Ability to write simple codes in JavaScript Programming Language
- Ability to use JavaScript's p5 Library to Make Games
- Ability to use Google's Teachable Machine to make Machine Learning Models

LEVEL 02

INTERMEDIATE

# INTRODUCTION TO ML5.js IMAGE AND SOUND CLASSIFICATION



Course Duration  
**12 Hours**



Session  
**09-20**



## Learning Outcome

- Mastery of ML 5 library of JavaScript Programming Language
- Understanding and ability to use world-enhancing algorithms like K Means and K Nearest Neighbor algorithm
- Ability to use a pre-trained model to construct your own model enabled by Google's Teachable Machine
- Ability to use Image Segmentation ML Softwares

Session

Curriculum

Outcome

09

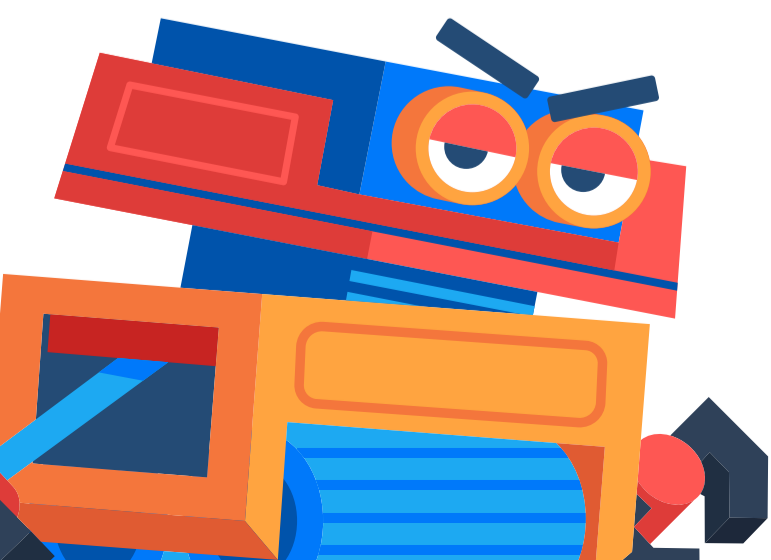
K Means Algorithm

Knowing an unsupervised Learning Algorithm - K means Algorithm

10

ML5 - Image Classification  
- Mobile Net

Making a Project using a Pretrained Model - Mobilenet, a model that can predict upto 1000 Classes



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ML5 - Image Classification  
- Doodle Net

Classifying the Doodle Images and  
realtime videos

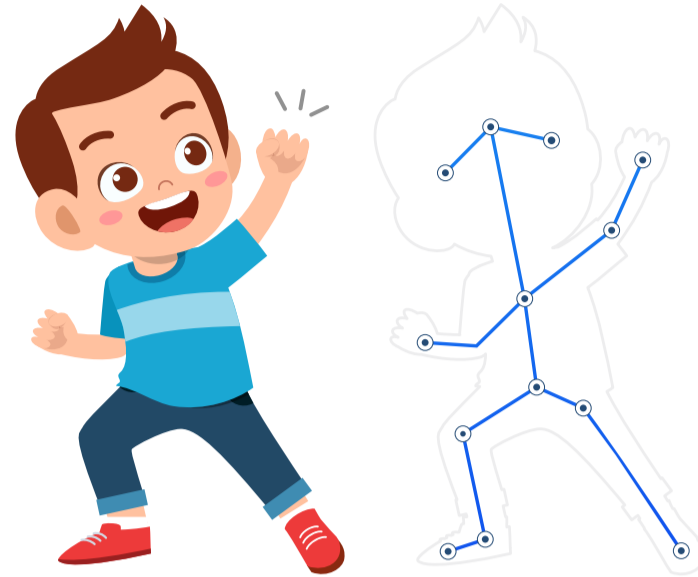
12

ML5 - Posture Detection  
- PoseNet

Detecting the posture by identifying  
the body features of a person in a  
image

...

13



Realtime Posture Detection by  
marking the skeleton

14

K Nearest Neighbour  
+ Image Classification

Making a Rock-Paper-Scissor game  
Using KNN Algorithm to sort the  
images

15

K Nearest Neighbour  
+ PoseNet

Classifying the postures using the  
model

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K Nearest Neighbour  
+ Train in Browser

Training a model in the browser

17

BodyPix Model

Making a ML model that detects  
the complete human body  
Removing the background

18

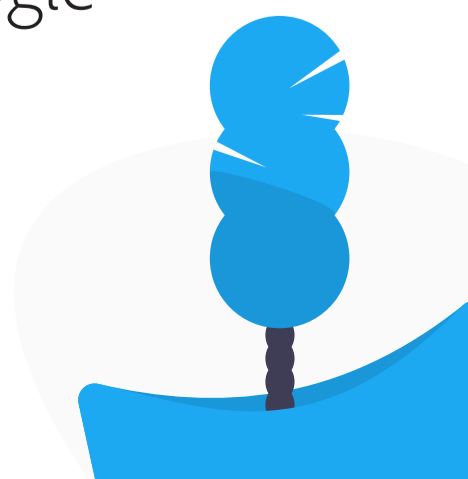
BodyPix Model with  
Image Segmentation

Cropping out the image and  
coloring it with random colors in  
a realtime classification process

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Sound Detection

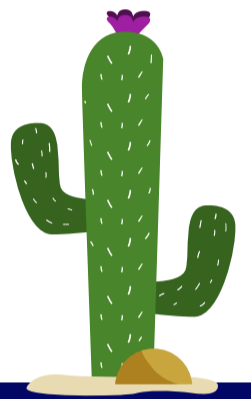
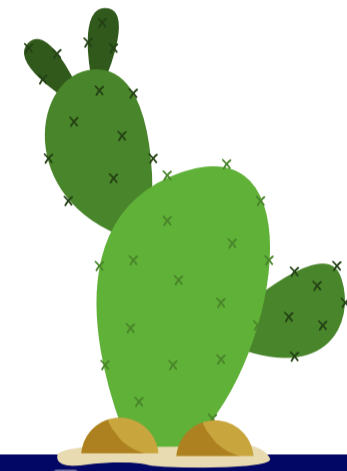
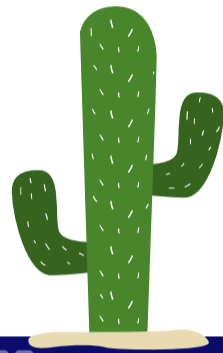
Making a Sound Detection model  
using both Pretrained Model and  
Model Train using the Google  
Trainable Machine



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## Chrome Dinosaur Game

Making a AI-Powered Chrome Dinosaur Project that is voice controlled



### Skill Benefits

- Enhanced Coding skills
- Ability to organize code in a Proper Manner
- Mastering ml5 Library of Javascript Programming Language
- Ability to make AI-powered games.
- Ability to make practical projects using AI



LEVEL 03

ADVANCED

# ADVANCED MACHINE LEARNING WITH TEXT HANDLING & NEURAL NETWORKS



Course Duration  
**20 Hours**



Session  
**21-40**



## Learning Outcome

- Ability to use AI to build powerful programs that have changed the 21st century's technological landscape
- Deep understanding of ever expanding world of AI
- Ability to understand concepts like object detection, face API etc. and use these tools to build their own program
- Creation of AI enabled game, which makes the machine play on its own!

Session

Curriculum

Outcome

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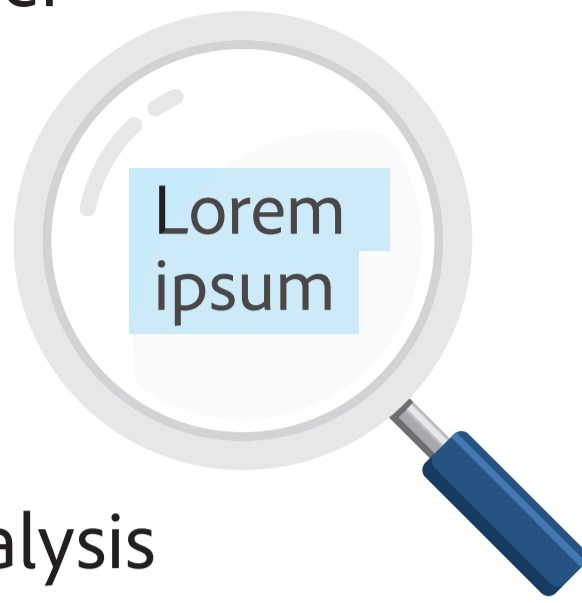
Word2vec

Converting words to numbers and performing arithmetic operations on them for Natural Language Processing



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### Synonym Finder



Project: Given an article and a word, the program can find words similar to the Input Word in the article

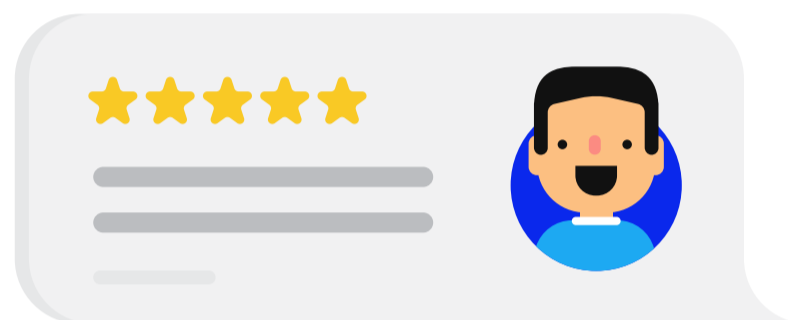
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### Sentiment Analysis

Text based Machine Learning model that gives Sentiment Score from 0 to 1 to an Input Sentence

24

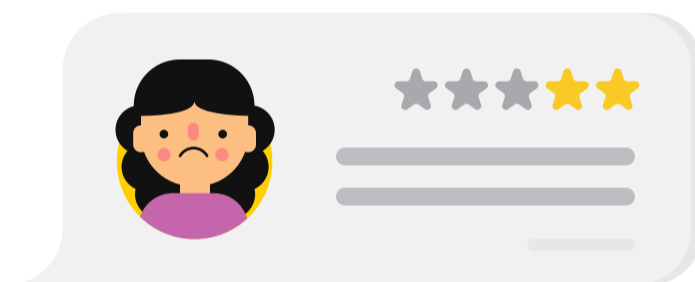
### Movie Recommender- 1



Project that asks user for their reviews regarding some movies and then suggests a new movie based on their reviews

25

### Movie Recommender- 2



Implementing the main Algorithm for finding minimum distance among vectors of an Array

26

### Object Detection

Building an Object Detection Model that shows various components present in the Image

27

### Object Detection Project

Live detection of Objects using Web Cam

28

### Auto Driving 2D Project

Using Object Identification to detect Obstacles in a 2D Path and Animating a Box that overcomes those obstacles



29

### SketchRnn



ML model used to draw doodles on a canvas



30

### SketchRnn Project

Project that gives the option of selecting a Doodle and then completes the drawing made by the user based on the Doodle choice



31

### UNET

Building a Machine Learning model that separates main image from the background image

32

### Face API

Building a ML Model that identifies face and its components like nose, ear, etc and draws Doodle on the face

33

### Face Detection



Project that uses face API to recognize face

34

### Neural Network-1

An introduction to Neural Networks and a classifier  
Project based on the concept

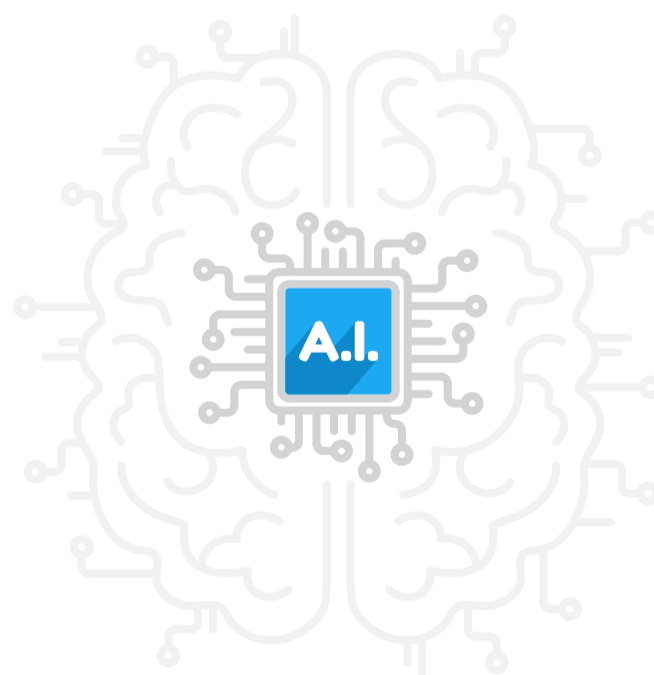
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### Neural Network-2

A classifier project that takes in live data on a canvas

36

### Neural Network-3



Using Posenet Library to detect body parts  
Building a Neural Network that classifies poses fed into the model

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### Neural Network-4

Continuing the previous project and adding UNET model to separate background image

38

Basketball Game Development

Building basketball game using JavaScript



39

Adding AI to the game



Creating a neural network that learns from the player

40

Adding AI to game-2

Using the Trained Neural Network to play the game. The computer can now shoot the ball on its own



## Skill Benefits

- Interaction with all the machine learning technologies of the modern world
- Creating various innovative projects using existing technologies like object detection, face detection, etc.
- Creating own machine learning models to perform new tasks
- Creating a game and teaching the machine to play that game on its own
- Ability to apply machine learning to real-life problems

