

# Diving into Model Training with Teachable Machine

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*Abstract---* This Document is a detailed knowledge about the Teachable Machine platform of google, In which different objects are captured from different angles and postures for the data collection and to train that data for the AI reorganization of it.

## 1. INTRODUCTION

The project is a *Networking Project*. This project has four classes and three process. The first class is CAT6 Cable and in this class, Insert all the information about CAT6 cable. Second class is Tenda router this class, Include the all data shapes of Tenda router (*Double Antenna*). The third class is also Tenda router but this Tenda router is single antenna 150mbps and the fourth one is EnGenius Access point and also insert the all information about this in project. Three process in this project based on three process the first is data gathering, the second one is training, and the third one is exporting the information of output.

## 2. CLASSES.

### A. CAT6 Cable

Category 6 cable (Cat 6), is a standardized twisted pair cable for Ethernet and other network physical layers that is backward compatible with the Category 5/5e and Category 3 cable standards. Cat 6 has to meet more stringent specifications for crosstalk and system noise than Cat 5 and Cat 5e. The cable standard specifies performance of up to 250 MHz, compared to 100 MHz for Cat 5 and Cat 5e. Cat6 cables have been around for only a few years less than Cat5E cables. However, they have primarily been used as the backbone to networks, instead of being run to workstations themselves. The reason for this (beyond cost) is the fact that, while Cat6 cables can handle up to 10 Gigabits of data, that bandwidth is limited to 164 feet — anything beyond that will rapidly

decay to only 1 Gigabit (the same as Cat5E). Cat6A is the newest iteration and utilizes an exceptionally thick plastic casing that helps further reduce crosstalk. The biggest distinguishing difference between Cat6 and Cat6A cables is that Cat6A can maintain 10 Gigabit speeds for the full 328 feet of Ethernet cable. Ultimately, those who want to have the most “future proofed” cable will want to go with Cat6A. However, for most resident and commercial purposes, Cat5E and Cat6 cables should be more than sufficient.

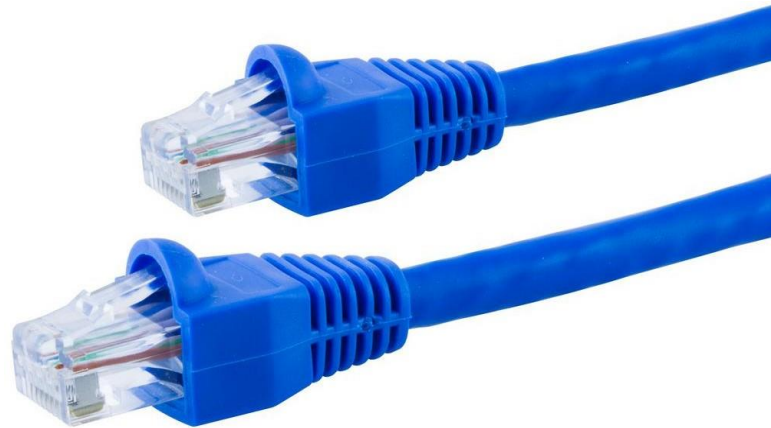


Figure 3 CAT6 Cable

### B. Tenda Router

The N301 Wireless N300 Easy Setup Router is designed to setup more easily for the home user. It complies with IEEE802.11n, delivers wireless speeds of up to 300 Mbps, making it perfect for everyday web activities like e-mail, chatting, streaming videos, online gaming and more. The N301 can also work as a client router to connect ISP network wirelessly or uplink AP to share the Internet to every corner, eliminating the dead point. Compatible with Wi-Fi Protected Setup™ (WPS), N301 features WPS that allows users to almost instantly setup their security simply by pressing the "WPS" button automatically

establishing a secure connection. Not only is this faster than normal security setups but more convenient in that you don't need to remember a password.

N301 offers multi-level wireless encryption options to prevent unauthorized access and protect your important data.  
1. 64/128bit WEP, WPA-PSK, WPA2-PSK.

2. Wireless Access Control based on the mac address of wireless adapter.

N3 includes the functions of a router, wireless AP and firewall. It supports WPA/WPA2 wireless security standards ensuring that you will be able to use the best possible encryption supported by your other wireless devices.



*Figure 2 Tenda Router (Double Antenna)*

### *C. Tenda Router (Single Antenna 150 mbps)*

N3 is a 802.11n compliant mini wireless router that delivers up to 4x faster wireless speeds and 3x farther range than 802.11g while staying backward compatible with 802.11g/b devices. Upgrading your home network to 150Mbps of Wireless N speed, the N3 provides an excellent solution for experiencing better wireless performance while sharing a broadband Internet connection with multiple computers over a secure wireless network. Equipped with one external 5dBi antenna, this router performs faster file transfers and farther coverage enabling greater wireless signals across your home.



*Figure 4 Tenda Router (Single Antenna 150 Mbps)*

### *D. EnGenius Access Point*

Utilizes 802.11n as well as 802.11ac standard speeds, with up to 1300 Mbps on its 5 GHz frequency band and up to 450 Mbps on its 2.4 GHz band. Ideal for media streaming, online gaming, and large file transfers in and around the home. EnShare lets users access media content from a storage device attached to the USB port of the EPG5000 in or away from home and enables users to upload content back to the attached USB drive on the EPG5000 when away from home via an available Internet connection. Available as a free download on the Apple or Google Play store, EnViewer lets small business owners or homeowners view EnGenius IP Camera feeds by connecting to the EPG5000 Gateway using a smartphone. Snap a JPEG or record video using a

connected smartphone. Receive alert messages to a smartphone when triggered by camera's motion detection feature.

HD 720P quality with real-time recording at 30 frames per second. Up to 1-Megapixel Resolution for better image clarity.

Motion and audio detect capability sends alert messages and video clips to your mobile device through EnViewer so you can respond accordingly and alert family members, law enforcement, the fire department or other emergency personnel.



2 Figure 4 EnGenius Access Point

### 3. PROCECC.

#### A. Data Gathering.

In this process get app the information about classes inform of pics, inform of voice, or inform of recording the data in this stage is a non-trainable data or dirty data. It is just an information, which used in project and get all information related to classes.

#### B. Training.

In this process, the getting data start training process all the data who get in Data Gathering process. This process realized the difference between classes and then this training data will use to realize the input information are related which class.

#### C. Exporting.

Exporting process use to get the output data after gathering and training and this output will be use in different, other process like check the quantity of the classes etc.

### 4. CONCLUSION

Driving into the model training with the teachable machine by google were successfully by the

98% results, The objects that were train were successfully recognized with AI of teachable machine.

### 5. REFFERENCES.

[1] CAT6 Cable

Link: <http://doortodoor.pk/computer-accessories/cat-6-lan-cable>

[2] Tender router(Double Antenna)

Link: <https://tendacn.com/en/product/n301.html>

[3] Tender router(Single Antenna)

Link: <https://www.every.pk/computers/networking/routers-access-points/tenda/5341-tenda-n3-wireless-n-router>

[4] EnGenius Access Point

Link: <https://vmart.pk/product/engenius-ebk1000-ip-camera-and-dual-band-iot-gateway-pakistan/>