Question 2

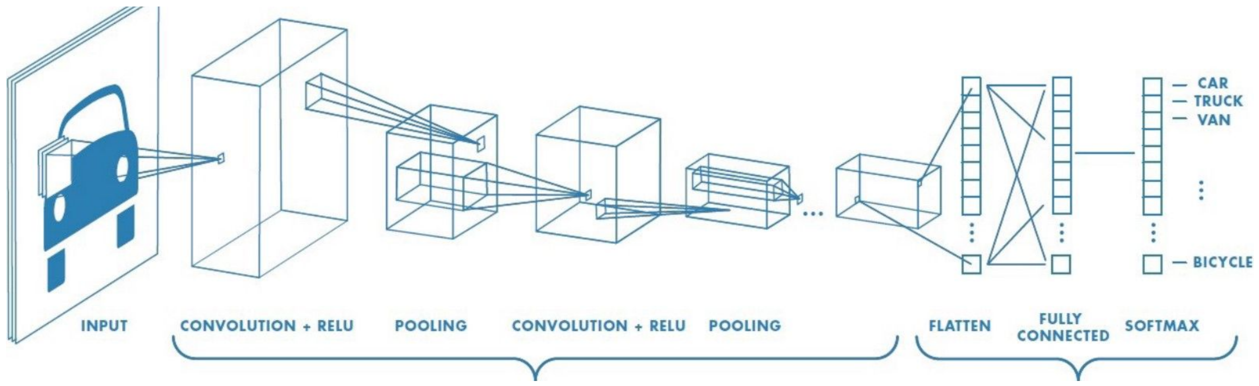
TJEDC - Tom and Jerry Emotion Detection Challenge

To load the image :

```
from PIL import Image
def read_image(image_path):
    image=Image.open(image_path)
    image=image.resize([640,360])
    image=np.array(image)
    #return np.dot(image[...,:3], [0.2989, 0.5870, 0.1140]) #rgb
    return image
```

Since the data consists of pictures it is best to use CNN to train the model.

CNN(**Convolutional Neural Networks**)



This is my model.

```
#CNN model
model = Sequential()
model.add(Conv2D(32, (3, 3), activation='relu', padding='same', name='conv_1',
input_shape=(360, 640, 3)))
model.add(MaxPooling2D((2, 2), name='maxpool_1'))
model.add(Conv2D(64, (3, 3), activation='relu', padding='same', name='conv_2'))
model.add(MaxPooling2D((2, 2), name='maxpool_2'))
model.add(Conv2D(128, (3, 3), activation='relu', padding='same',
name='conv_3'))
model.add(MaxPooling2D((2, 2), name='maxpool_3'))
model.add(Conv2D(128, (3, 3), activation='relu', padding='same',
name='conv_4'))
model.add(MaxPooling2D((2, 2), name='maxpool_4'))
model.add(Flatten())
model.add(Dropout(0.5))
model.add(Dense(512, activation='relu', name='dense_1'))
model.add(Dense(128, activation='relu', name='dense_2'))
model.add(Dense(5,activation='softmax', name='output'))
model.compile(loss='categorical_crossentropy', optimizer = 'adam', metrics =
['accuracy'])
```

Observations:

1. *Normalization is done by dividing the dataset by 255.*
2. *I have tried CNN, with different layers.*
3. *Changed the number of epochs*
4. *I have taken the original image with the original dimension because I thought that it will affect the prediction because the face of jerry is very small if we reduce the dimensions it will lose some important features.*

5. *I have reduced the size of test data to 360*640 from 1080*1920 to test it.*
6. *With epochs = 30, I got 96% accuracy in the test data.*
7. *With epochs = 60, I got 100% accuracy in the test data.*

Conclusion:

Hence, For test data, I have used epochs=60 to train the model and I got 100% test accuracy.