# Test Case 1:

1. The existing Video Learning project was trained with three small video data set know as Circle, Triangle and Rectangle. Parameters were specified in the code and was used to run the **Run2()** function. By keeping all the parameters stagnant we have trained the HTM model with the SP + TM and documented the accuracy after 1000 cycles. After the stable pattern was reached after each video set being trained, we documented the following result.
2. Video Set of Label: **Circle reachs accuracy: 86.20689655172413%**

Cycle**: 72**  Matches **= 25 of 30 Stable pattern reached**

1. Video Set of Label: **Rectangle reachs accuracy: 89.65517241379311%**

Cycle: **64** Matches= **26 of 30 Stable pattern reached**

1. Video Set of Label: **Triangle reachs accuracy:** **100%**

Cycle**: 57**  Matches= **29 of 30 Stable pattern reached**

**Average Accuracy: 91.95402299**

1. Afterwards we have changed the parameter **maxCycles = 1200** and kept every other parameter same.

1. Video Set of Label: **Circle reachs accuracy: 93.10344827586206%**

Cycle**:** **60**  Matches **= 27 of 30 Stable pattern reached**

1. Video Set of Label: **Rectangle reachs accuracy: 82.75862068965517%**

Cycle**:** **64**  Matches **= 24 of 30 Stable pattern reached**

1. Video Set of Label: **Triangle reachs accuracy: 96.55172413793103%**

Cycle**:** **57**  Matches **= 28 of 30 Stable pattern reached**

**Average Accuracy: 90.8045977**

1. So, we have seen that 1000 max cycles gives us the highest training average accuracy. We have taken one random frame from each of the Converted video set folders and experimented the prediction section of the code when the maxCycles = 1000.
2. We took frame no 13 which is Circle\_circle\_13.png and found the result below.

**Predicted Series**:

Rectangle\_rectangle\_26-Rectangle\_rectangle\_27-Rectangle\_rectangle\_28-Rectangle\_rectangle\_29-Rectangle\_rectangle\_0-Rectangle\_rectangle\_1-Rectangle\_rectangle\_2-Rectangle\_rectangle\_3-Rectangle\_rectangle\_4-Rectangle\_rectangle\_5-Rectangle\_rectangle\_6-Rectangle\_rectangle\_7-Rectangle\_rectangle\_8-Rectangle\_rectangle\_9-Rectangle\_rectangle\_10-Rectangle\_rectangle\_11-Rectangle\_rectangle\_12-Rectangle\_rectangle\_13-Rectangle\_rectangle\_14-Rectangle\_rectangle\_15-Rectangle\_rectangle\_16-Rectangle\_rectangle\_17-Rectangle\_rectangle\_18-Rectangle\_rectangle\_19-Rectangle\_rectangle\_20-Rectangle\_rectangle\_21-Rectangle\_rectangle\_22-Rectangle\_rectangle\_23-Rectangle\_rectangle\_24-Rectangle\_rectangle\_25

Initially it has predicted the sequences of the next frames to be wrong. Afterwards it generates next sequences of frames.

**Predicted Series:**

Circle\_circle\_0-Circle\_circle\_1-Circle\_circle\_2-Circle\_circle\_3-Circle\_circle\_4-Circle\_circle\_5-Circle\_circle\_6-Circle\_circle\_7-Circle\_circle\_8-Circle\_circle\_9-Circle\_circle\_10-Circle\_circle\_11-Circle\_circle\_12-Circle\_circle\_13-Circle\_circle\_14-Circle\_circle\_15-Circle\_circle\_16-Circle\_circle\_17-Circle\_circle\_18-Circle\_circle\_19-Circle\_circle\_20-Circle\_circle\_21-Circle\_circle\_22-Circle\_circle\_23-Circle\_circle\_24-Circle\_circle\_25-Circle\_circle\_26-Circle\_circle\_27-Circle\_circle\_28-Circle\_circle\_29

1. We took frame no 17 which is Rectangle\_rectangle\_17.png and found the result below.

**Predicted Series:**

Triangle\_triangle\_10-Triangle\_triangle\_11-Triangle\_triangle\_12-Triangle\_triangle\_13-Triangle\_triangle\_14-Triangle\_triangle\_15-Triangle\_triangle\_16-Triangle\_triangle\_17-Triangle\_triangle\_18-Triangle\_triangle\_19-Triangle\_triangle\_20-Triangle\_triangle\_21-Triangle\_triangle\_22-Triangle\_triangle\_23-Triangle\_triangle\_24-Triangle\_triangle\_25-Triangle\_triangle\_26-Triangle\_triangle\_27-Triangle\_triangle\_28-Triangle\_triangle\_29-Triangle\_triangle\_0-Triangle\_triangle\_1-Triangle\_triangle\_2-Triangle\_triangle\_3-Triangle\_triangle\_4-Triangle\_triangle\_5-Triangle\_triangle\_6-Triangle\_triangle\_7-Triangle\_triangle\_8-Triangle\_triangle\_9

**Predicted Series:**

Circle\_circle\_0-Circle\_circle\_1-Circle\_circle\_2-Circle\_circle\_3-Circle\_circle\_4-Circle\_circle\_5-Circle\_circle\_6-Circle\_circle\_7-Circle\_circle\_8-Circle\_circle\_9-Circle\_circle\_10-Circle\_circle\_11-Circle\_circle\_12-Circle\_circle\_13-Circle\_circle\_14-Circle\_circle\_15-Circle\_circle\_16-Circle\_circle\_17-Circle\_circle\_18-Circle\_circle\_19-Circle\_circle\_20-Circle\_circle\_21-Circle\_circle\_22-Circle\_circle\_23-Circle\_circle\_24-Circle\_circle\_25-Circle\_circle\_26-Circle\_circle\_27-Circle\_circle\_28

It has predicted all the sequences wrong when we tested the model with Rectangle frames.

1. We took frame no 4 which is Triangle\_triangle\_4.png and found the result below.

**Predicted Series:**

Triangle\_triangle\_6-Triangle\_triangle\_7-Triangle\_triangle\_8-Triangle\_triangle\_9-Triangle\_triangle\_10-Triangle\_triangle\_11-Triangle\_triangle\_12-Triangle\_triangle\_13-Triangle\_triangle\_14-Triangle\_triangle\_15-Triangle\_triangle\_16-Triangle\_triangle\_17-Triangle\_triangle\_18-Triangle\_triangle\_19-Triangle\_triangle\_20-Triangle\_triangle\_21-Triangle\_triangle\_22-Triangle\_triangle\_23-Triangle\_triangle\_24-Triangle\_triangle\_25-Triangle\_triangle\_26-Triangle\_triangle\_27-Triangle\_triangle\_28-Triangle\_triangle\_29-Triangle\_triangle\_0-Triangle\_triangle\_1-Triangle\_triangle\_2-Triangle\_triangle\_3-Triangle\_triangle\_4-Triangle\_triangle\_5

Initially it has predicted the sequences of frames right which is Triangle.

**Predicted Series:**

Circle\_circle\_0-Circle\_circle\_1-Circle\_circle\_2-Circle\_circle\_3-Circle\_circle\_4-Circle\_circle\_5-Circle\_circle\_6-Circle\_circle\_7-Circle\_circle\_8-Circle\_circle\_9-Circle\_circle\_10-Circle\_circle\_11-Circle\_circle\_12-Circle\_circle\_13-Circle\_circle\_14-Circle\_circle\_15-Circle\_circle\_16-Circle\_circle\_17-Circle\_circle\_18-Circle\_circle\_19-Circle\_circle\_20-Circle\_circle\_21-Circle\_circle\_22-Circle\_circle\_23-Circle\_circle\_24-Circle\_circle\_25-Circle\_circle\_26-Circle\_circle\_27-Circle\_circle\_28

Afterwards it has predicted all the frame sequences wrong.