Animations play an important role in user interface design. Here, we investigate the problem of learning new animations from previous examples, as a step toward automating interface development, and as a testbed to explore the role of crowdsourcing in complex machine learning tasks.

**Motivation**

To predict the next step of an animation using Long Short Term Memory (LSTM) Recurrent Neural Network in the Apparition System. LSTM network is well-suited to predict time series data when there are long time lags between important events.

**Goal**

To predict the next step of an animation using LSTM Recurrent Neural Network in the Apparition System. LSTM network is well-suited to predict time series data when there are long time lags between important events.

**Data creation and processing**

We created the data needed to feed into the LSTM by running the animation in the Apparition system and stored the generated data in MongoDB. The generated data has:

* 48 (small) and 392 (large) instances.

We also performed pre-processing of the data set using normalization and removing NaN value.

**Feature space**

We represented the state of each element in time as a point in a vector space with two distinct sets (start and end) each having:

- Name.
- Shape.
- Orientation.
- Position.
- Transformation: Translation, rotation, reflection.

The total number of feature space is 42.

**Implementation & Results**

We built the LSTM model with back propagation. The experiments are done with learning Rate = 0.1, num of layers = 5, epoch = 5, batch size = 5 and 48 number of instance (small model) and 392 number of instances (large model).

**Conclusions**

- Since training perplexity is an indication of how well a probability model predicts a sample. A low training perplexity indicates the probability model is good at predicting the sample. As the number of epochs is increasing the model is getting better and better in predicting the next step of the animation.
- LSTM model is getting better and better with large number of data instance in predicting the next step of the animation compared to smaller model.

**Future Work**

- Need to check the model’s accuracy with even larger number of data instances.
- Need to plug back the model’s output into the Apparition system to see the flow of the animation.

**References:**


[2] https://www.semanticscholar.org/paper/Apparition-Crowdsourced-User-Interfaces-Lasecki-Kim/10a5fc295bf92a054da33329b068768a6e2be3d4