DATA AUGMENTATION FOR MACHINE LEARNING OF UI ANIMATIONS

Dhruv Gala (dmg7937@rit.edu)
Advisor: Dr. Christopher M. Homan
Rochester Institute of Technology

INTRODUCTION
• Prototyping is a necessary phase in GUI design.
• Apparition provides Wizard-of-Oz intelligence to GUI prototyping.
• Investigate to replace the Wizard-of-Oz intelligence with Artificial Intelligence. Data Augmentation is required for LSTM to learn efficiently.

CONTRIBUTIONS
• Designed and developed a suite of data augmentation tools for improving the Machine Learning phase.
• Developed a visualization tool for the augmentation data results.

APPARITION/BACKGROUND
• Software used:
  • Meteor
  • MongoDB
  • Python 2.7
  • Anaconda

APPARITION TOOL

ARCHITECTURE

RESULTS

VISUALIZATIONS

• Linear Interpolation module smooths the data point through the path linearly in time and space.
• Two different jitter modules, one jitters as per random weights and other by slope computations were created.
• A visualization module implemented to get data points of animation plot over the canvas without uploading back to canvas.

FUTURE WORK
• Use combination of ways in which data augmentation could be perform to evaluate the learning of LSTM networks.
• Plug in different mathematical operation into the data augmentation suite and then run over the LSTM model for effective learning.
• Generate more examples for testing LSTM model and understanding the behavior of animations after data augmentation.