Memory1

April 3, 2017

Notebook for determining the sensitivity of the model using Memory 1 strategies

```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from MachineLearning import *
```

```python
training_df = pd.read_csv('large_training_data.csv', index_col=0)
results_df = pd.read_csv('std_summary.csv')
ordered_strats = results_df.Name.values
model_strats = ordered_strats[::5] # every 5th strategy when order by rank
model_train_df, model_score_df = split_dataframe(model_strats, training_df)
lr_model, svc_model = create_models_for_sample(model_train_df)
```

```python
results_file_path = './memory1.csv'
memory1_comparison_df = pd.read_csv(results_file_path)
```

```python
memory1_comparison_df = memory1_comparison_df[memory1_comparison_df.Epsilon
prediction_df = memory1_comparison_df.copy()
memory1_results_df = memory1_comparison_df.copy()
prediction_df.drop(['Name_A', 'Name_B', 'Epsilon'], axis=1, inplace=True)
predictions = svc_model.predict(X=prediction_df)
memory1_results_df = memory1_comparison_df.copy()
memory1_results_df['Prediction'] = predictions
memory1_results_df = memory1_results_df[['Name_A', 'Name_B', 'Epsilon', 'Pr

line_results_df = memory1_results_df.groupby('Epsilon')['Prediction'].agg([
violin_results_df = memory1_results_df.groupby(['Epsilon', 'Name_A'])['Pred
line_results_df['Proportion Correct'] = 1 - line_results_df['sum']/line_res
violin_results_df['Proportion Correct'] = 1 - violin_results_df['sum']/viol
violin_results_df.drop(['sum', 'count', 'Name_A'], axis=1, inplace=True)

violin_groups = violin_results_df.groupby('Epsilon')['Proportion Correct'].
pos = violin_results_df['Epsilon'].unique()
proportions = violin_groups.tolist()
```

```python
fig, ax = plt.subplots()
line_results_df.plot(x='Epsilon', y='Proportion Correct', ax=ax)
```

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```python
plt.violinplot(proportions, positions=pos, widths=0.02)
plt.xlabel('$\delta$')
plt.xlim([0, 0.7])
plt.ylim([-0.1, 1.1])
plt.savefig('/Users/James/Projects/FinalYearReport-Manuscript/img/ML/propor
plt.show()
```