Semi-supervised training of CNNs

Student: Kevin Duarte
Mentors: Dr. Boqing Gong
Yang Zhang
What I have accomplished

- I have successfully implemented semi-supervised CNN
- I tested the semi-supervised classifier against supervised CNNs trained with varying amounts of data
Preliminary Results

- Using the auto-encoder’s weights, we trained a CNN on 10,000 labeled images.
- We also trained a randomly initialized CNN on the same 10,000 labeled images, as well as one trained on 50,000 labeled images.

<table>
<thead>
<tr>
<th>CNN</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-supervised, trained on 10,000 images</td>
<td>55.01%</td>
</tr>
<tr>
<td>Randomly initialized, trained on 10,000 images</td>
<td>47.09%</td>
</tr>
<tr>
<td>Randomly initialized, trained on 50,000 images</td>
<td>53.63%</td>
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</tbody>
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Coming weeks

- I plan on making a deeper auto-encoder and CNN, to see if more state of the art results can be obtained.
- Instead of just using a naive auto-encoder, which I have now, I plan on implementing a what-where auto-encoder to obtain better results.