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Assignment 3 discussion:
- The results are very much dependent on training data timings.
- Possible extra features could be added using a grid encoding, e.g. a 5x5 grid would mean 25 new features stating the no. of pixels in each block.
- Cannot use number of strokes as a feature as it's not normally distributed, but can be used in preprocessing step.
- Inconsistent probability values; possible solutions: normalization, use just mantissa after averaging the values.
- The newly released “dollar recognizer” was also discussed.

Papers:

Recognition Of Mathematical Notation:
- The paper talks about recognizing mathematical expressions and notations.
- This paper was not discussed in the class.

An efficient syntactic approach to structural analysis of on-line handwritten mathematical expressions:
- Accuracy statistics are missing.
- Top down vs bottom up approaches of parsing were discussed
  - Most language compilers use top down approach.
- What could be possible measures of accuracy?
  - Boolean – all symbols recognized correctly true/false.
  - Parsetree – count number of correct operations.
  - Comparing quantities of symbols recognized correctly with actual quantities of symbols.
  - However all of the above approaches still don't address the issue of one symbol screwing everything.
  - There is no clear metric or benchmark for accuracy of math. expression parsing at present.

Learning to Parse Hierarchical Lists and Outlines using Conditional Random Fields:
- Computation of lambda values missing.
- Conditional random fields mentioned but not discussed in the paper.
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- Low accuracy results.
- Novel approach!
- A heuristic approach for determining line indents was discussed in the class.
- Applications:
  - Exporting word files.
  - Collapse text block, could be useful for code/pseudo code generation.
  - Power-point slides.
  - Conference presenter.

Statistical Visual Language Models for Ink Parsing:

- Requires having knowledge of the context
- Evaluations from only handful users.
- The authors could have postulated new feature set instead of blaming rubine's algorithm for classification errors.
- Can visual language be used for math expression parsing?
  - Outline of the expression could be one possible way to recognize it.
  - A typical outline will have lots of hatches. Might fail if the page actually has a drawing with hatches in it.