Android App for Evaluating Handwritten Mathematical Expressions

Group Members:
Nico Chaves (nchaves@stanford.edu)
Noam Weinberger (noamw@stanford.edu)

We propose to develop an Android app to recognize and evaluate handwritten mathematical expressions and equations. For our initial scope, we plan to focus on recognizing digits (0-9) and basic mathematical operators (+, -, x, and /), and displaying the computed result on the device's viewfinder. This will be our primary goal.

To accomplish this goal, we plan to explore different optical character recognition (OCR) algorithms, including the template matching algorithms we've seen in class. Since the app will run on a mobile device, our algorithm will need to tradeoff between performance and computational complexity.

If time permits, we would have several potential stretch goals to choose from. For example, we may add augmented reality features to the app. It would be interesting to overlay answers, error corrections, or incremental calculations onto the device's viewfinder. We may also be able to identify and solve multiple expressions simultaneously. Finally, we may improve the app to recognize and evaluate a wider range of mathematical symbols and operators.

Potential References

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