Object tracking via adaptive prediction of initial search point on mobile devices
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Motivation
- Common feature tracking algorithms, such as SIFT and SURF, are fairly slow in runtime due to the processing of a large amount of external data.
- If the object is sufficiently small, outside noise may throw off the object detection device without prior knowledge.
- Machine learning, especially Markov chains, can use prior knowledge to turn a computationally expensive task into a faster, stochastic one.

Future Work
- Creating a better template for homography estimation than the first image, which will reduce noise in detecting keypoints
- Generalized algorithm so a template can be chosen on Android without further tuning
- Further integration of the masking region

References
- http://www.cs.cmu.edu/~jiyanpan/papers/lncs06.pdf - Inspiration for this project, uses Kalman filter on the rate of change of affine transformation parameters for adaptive prediction

Adaptive Prediction Technique

Experimental Results
Left: the Kalman filtered box estimation (blue) is more invariant to size and horizontal shifts in position than the standard detector (magenta)
Top: The descriptor matches contain much less noise with the region masking (left) than without any region masking (right).