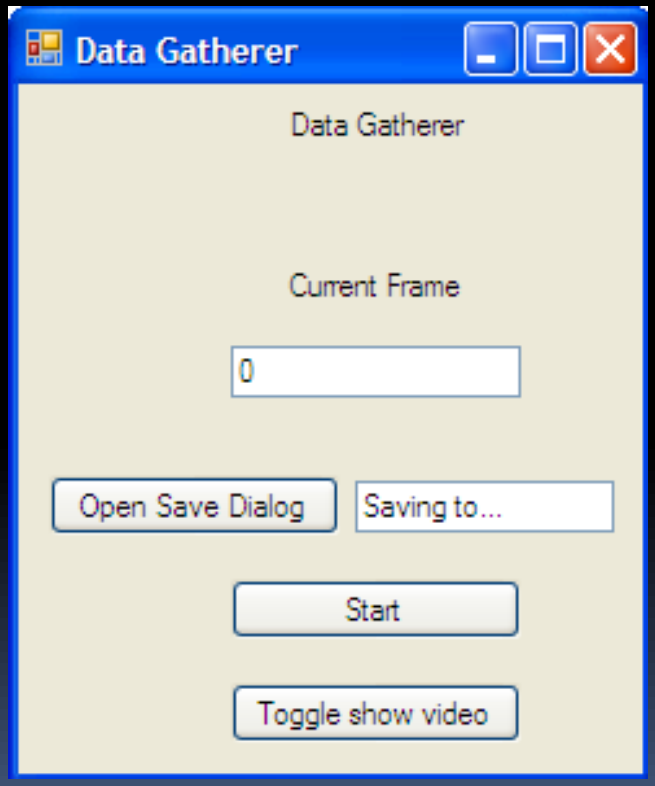
Phillip Napieralski

REU
WEEK 9 PRESENTATION

Data Gatherer



PaF dataset

- Made the Prince and Friends dataset
  - 20 examples of each gesture
    - Zorro
    - S Shape
    - Stab
    - Slash

Using that data

- The code for the Rubin Classifier works

Using that data

- The code for the Rubin Classifier ~~works~~ compiles
  - The covariance matrix is singular

$$w_{\hat{c}j} = \sum_{i=1}^{F} (\boldsymbol{\Sigma}^{-1})_{ij} \bar{f}_{\hat{c}i} \qquad 1 \le j \le F$$

$$w_{\hat{c}0} = -\frac{1}{2} \sum_{i=1}^{F} w_{\hat{c}i} \bar{f}_{\hat{c}i}$$

"Specifying Gestures by Examples" by D. Rubine

Features

- What causes the matrix to be singular?

$$\Sigma_{\hat{c}ij} = \sum_{e=0}^{E_{\hat{c}}-1} (f_{\hat{c}ei} - \overline{f}_{\hat{c}i})(f_{\hat{c}ej} - \overline{f}_{\hat{c}j})$$

- Try new features

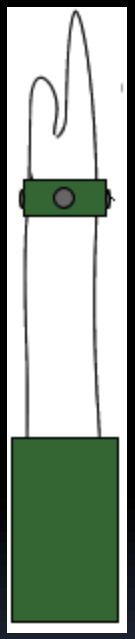
Summary of the week

- Attempted to prove antipodal technique mathematically
- Moved all antipodal matlab code to C#
  - Learned C#
  - About ~1000 lines code written
- Wrote the classifier

Future

- Classify some gestures
- Prove the antipodal technique mathematically

Questions?



Arm courtesy of Jon Harter