WEEK ONE

Stephanie Morris
LEARNING MATLAB

• Went through tutorial provided
  • Vectors
  • Matrices
  • Indexing
  • Operations
  • Image manipulation
  • Convolution
  • Videos
  • Graphing
LUCAS-KANADE OPTICAL FLOW INPUT

\[
\begin{bmatrix}
  f_{x1} & f_{y1} \\
  \vdots & \vdots \\
  f_{x9} & f_{y9}
\end{bmatrix}
\begin{bmatrix}
  u \\
  v
\end{bmatrix}
= 
\begin{bmatrix}
  -f_{t1} \\
  \vdots \\
  -f_{t9}
\end{bmatrix}
\]

\[Au = f_t\]
\[A^TAu = A^Tf_t\]
\[u = (A^TA)^{-1}A^Tf_t\]
LUCAS-KANADE OPTICAL FLOW OUTPUT
LK VS PYRAMIDS

- Use pyramids for large objects/movement
- Multiple layers
- Attempted implementing pyramids but failed
  - Finished pseudocode, took too long to implement
SIFT (SCALE-IN Variant FEATURE TRANSFORM)
GOALS FOR NEXT WEEK

• Continue with SIFT
• Meet with graduate students
• Choose a graduate student to work with (GPS Tag Refinement/Describing Images Through Words/3D Joint Localization for Gesture Recognition)
• Read necessary literature
  • Papers
  • Code
  • Data and Results