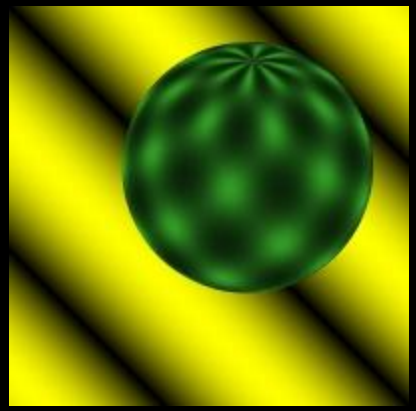
WEEK ONE

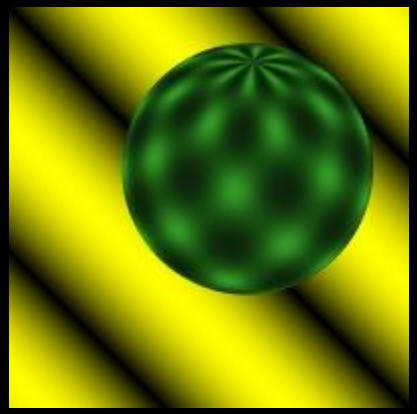
Stephanie Morris

LEARNING MATLAB

- Went through tutorial provided
  - Vectors
  - Matrices
  - Indexing
  - Operations
  - Image manipulation
  - Convolution
  - Videos
  - Graphing

LUCAS-KANADE OPTICAL FLOW INPUT





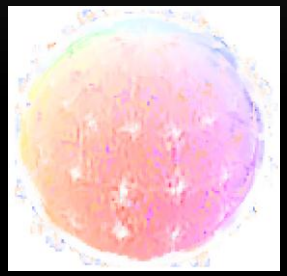
$$\begin{bmatrix} f_{x1} & f_{y1} \\ \vdots & \vdots \\ f_{x9} & f_{y9} \end{bmatrix} \begin{bmatrix} u \\ v \end{bmatrix} = \begin{bmatrix} -f_{t1} \\ \vdots \\ -f_{t9} \end{bmatrix}$$

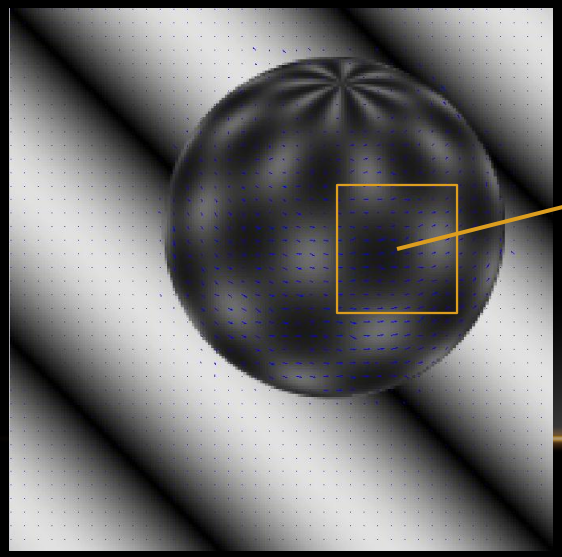
$$\mathbf{Au} = \mathbf{f_t}$$

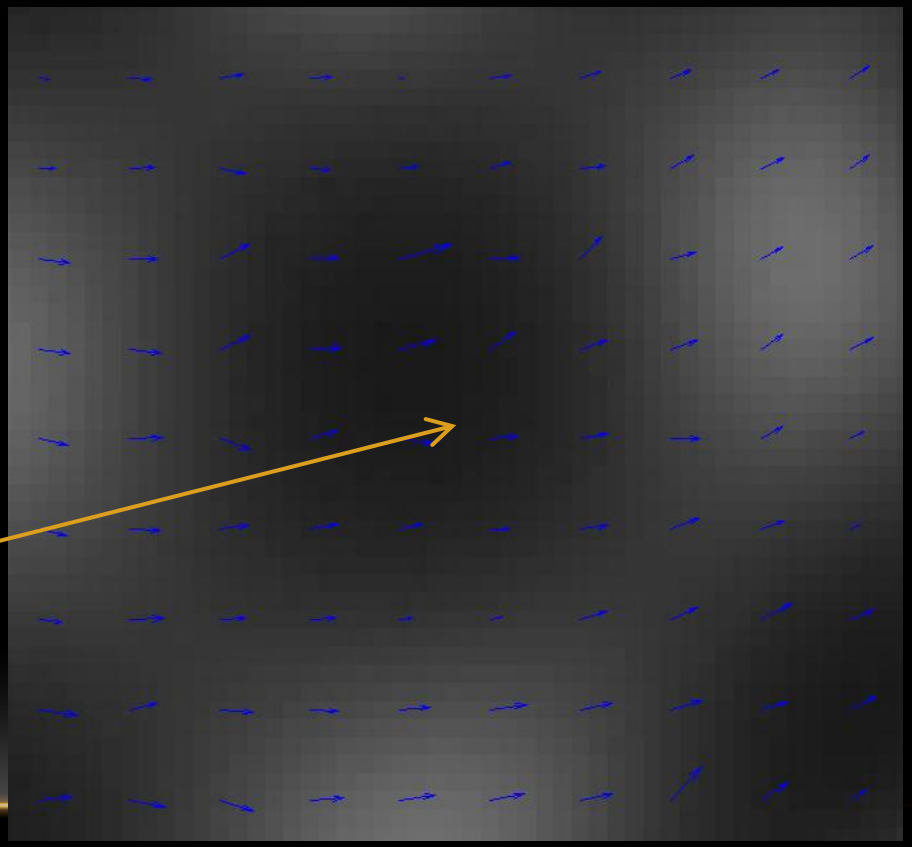
$$\mathbf{A^T Au} = \mathbf{A^T f_t}$$

$$\mathbf{u} = (\mathbf{A^T A})^{-1} \mathbf{A^T f_t}$$

LUCAS-KANADE OPTICAL FLOW OUTPUT





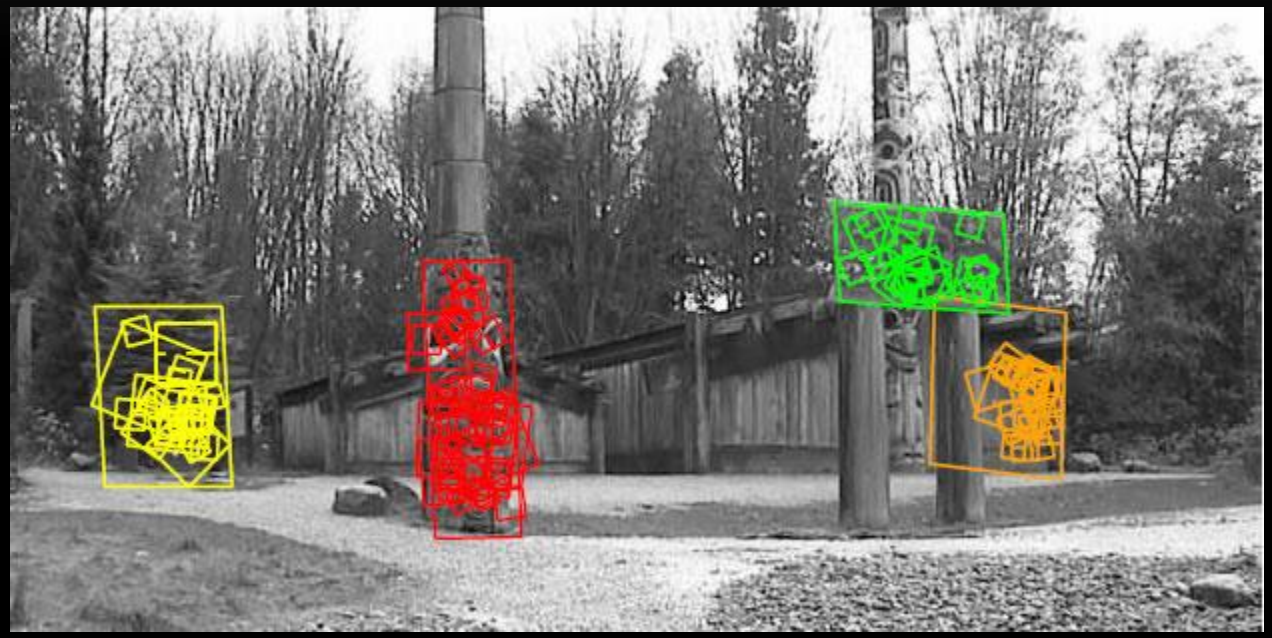


LK VS PYRAMIDS

- Use pyramids for large objects/movement
- Multiple layers
- Attempted implementing pyramids but failed
  - Finished psuedocode, took too long to implement

SIFT (SCALE-INVARIANT 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