Report Meeting Week 5

Benjamin Mears

- Week's Progress
- KeyFrame extraction
- Where to next?

Week's Progress

- Implemented SVM
  - Histogram instersection kernel
  - Improved results vs logistic regression
- Keyframe extraction algorithm
  - From ”Online, Simultaneous Shot Boundary Detection and Key Frame Extraction For Sports Videos Using Rank Tracing”-Wael Abd-Almageed

Basic Idea of Algorithm

- Step 1: Extract frames and convert to HSV colorspace
- Step 2: Create histogram of HSV values for each frame.
- Step 3: Concantanate into a matrix X^T

$$X^T = \begin{bmatrix} x^1 \\ x^2 \\ x^3 \\ \vdots \end{bmatrix} = \begin{bmatrix} \text{histogram for frame 1} \\ \text{histogram for frame 2} \\ \text{histogram for frame 3} \\ \vdots \end{bmatrix}$$

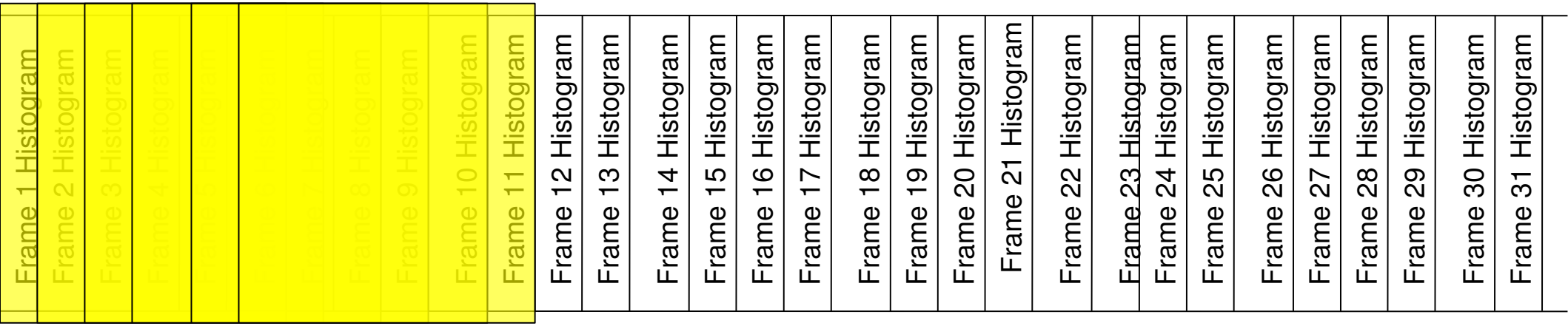
Basic Idea of Algorithm (Cont.)

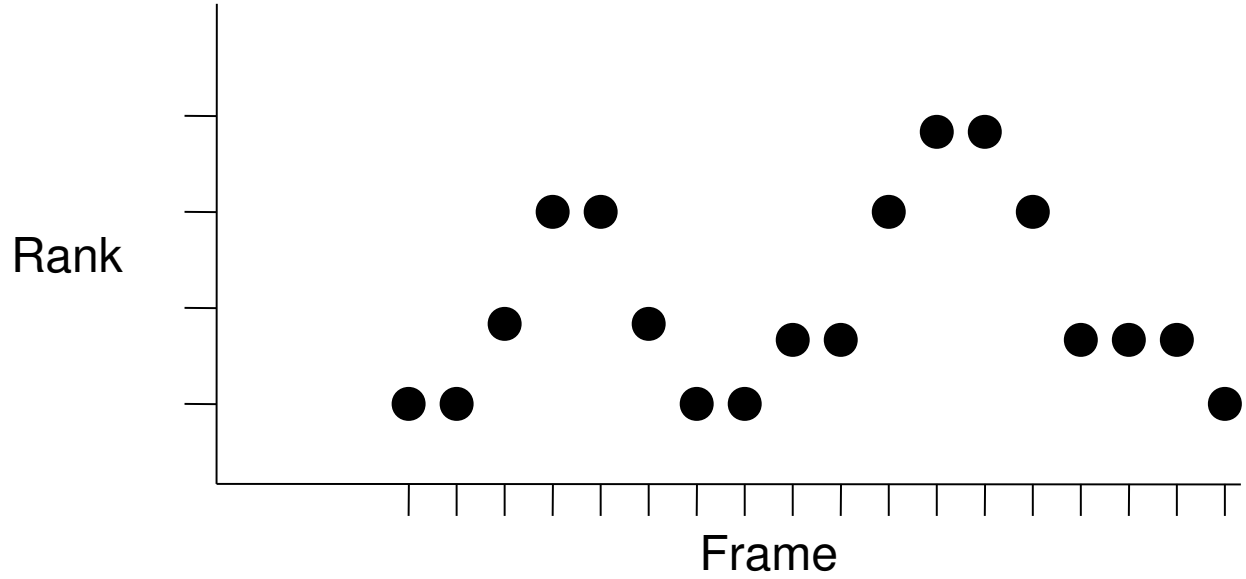
- For each frame, take a submatrix of X^T, consisting of x^f, along with the previous *N-1* rows:

$$\begin{bmatrix} x^{f-N+1} \\ \vdots \\ x^{f-1} \\ x^{f} \end{bmatrix} = \begin{bmatrix} \text{histogram for frame } f-N+1 \\ \vdots \\ \text{histogram for frame } f-1 \\ \text{histogram for frame } f \end{bmatrix}$$

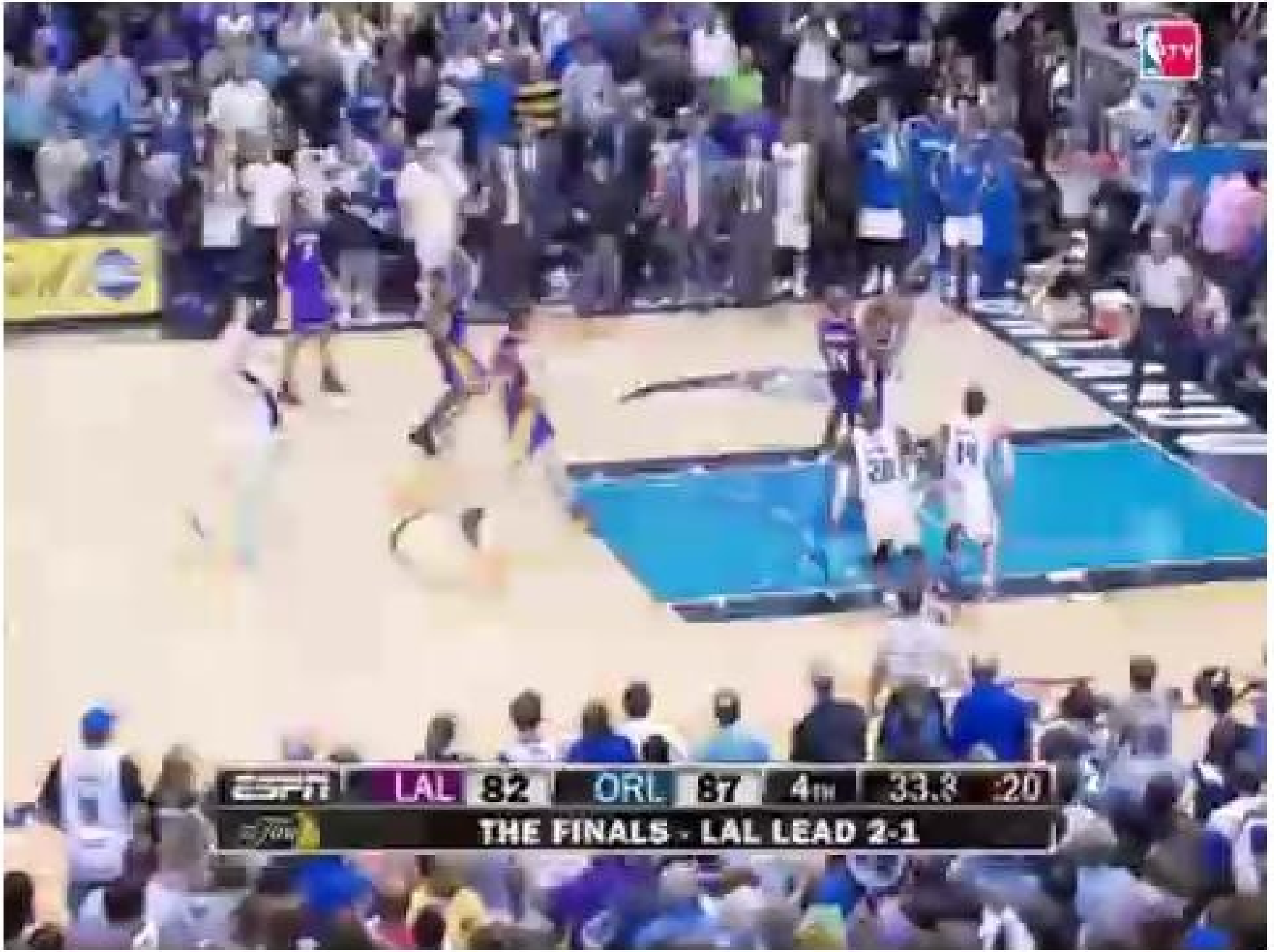
- Take the singular value decomposition of this matrix and use it to estimate the rank

The Scanning Window...





From Wael Abd-Almageed


ESPN
LAL 82
ORL 87
4TH
33.3
:20
THE FINALS - LAL LEAD 2-1


DEFENSE


DEFENSE

Next Week's Goal Plans

- Finish integrating LIBSVM
- Begin exploring optical flow in OpenCV
- Look for ideas while at CVPR that may help our system
  - Begin brainstorming novel ideas to use