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REU
WEEK 12 PRESENTATION

From last time

	Z	S	FS	BS	P	V	St	Tw	R	Ci	Lsb	Rsb	Inf	Ca	Tri	
Zorro	0.5	0	0	0	0	0	0	0	0	0.2	0	0	0.3	0	0	
S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Forward_Slash	0	0.7	0.1	0	0	0	0	0	0	0	0	0	0	0	0	
Back_Slash	0.1	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0.7	0	
Pigtail	0.1	0	0	0	0.1	0	0	0	0	0.2	0	0	0.3	0.3	0	
V	0	0	0.1	0	0	0.4	0	0	0	0.4	0	0	0	0	0.1	
Stab	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
Twist	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
Rectangle	0	0.1	0	0	0	0	0	0	0.9	0	0	0	0	0	0	
Circle	0	0	0	0	0	0	0	0	0	0.9	0	0	0.1	0	0	
Left SB	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
Right SB	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
Infinity	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
Caret	0	0	0	0	0.4	0	0	0	0	0	0.1	0	0	0.5	0	
Triangle	0	0.1	0	0	0	0	0	0	0.4	0	0	0	0	0	0.5	
																0.666666667

- Average accuracy: 66.67%

New Dataset (PaF)

- Official PaF dataset
  - Contains 10 gesture instances from Kevin, 10 from Ben and 10 from Lance

  - Total of 450 gesture instances to test on

New Results 1

- Add Jon's features
  - Divide egomotion (R & T) matrix into 4 sections
- Also, divide into 2, 3 and 4 sections
  - Had best results
- For each section, find the signed average
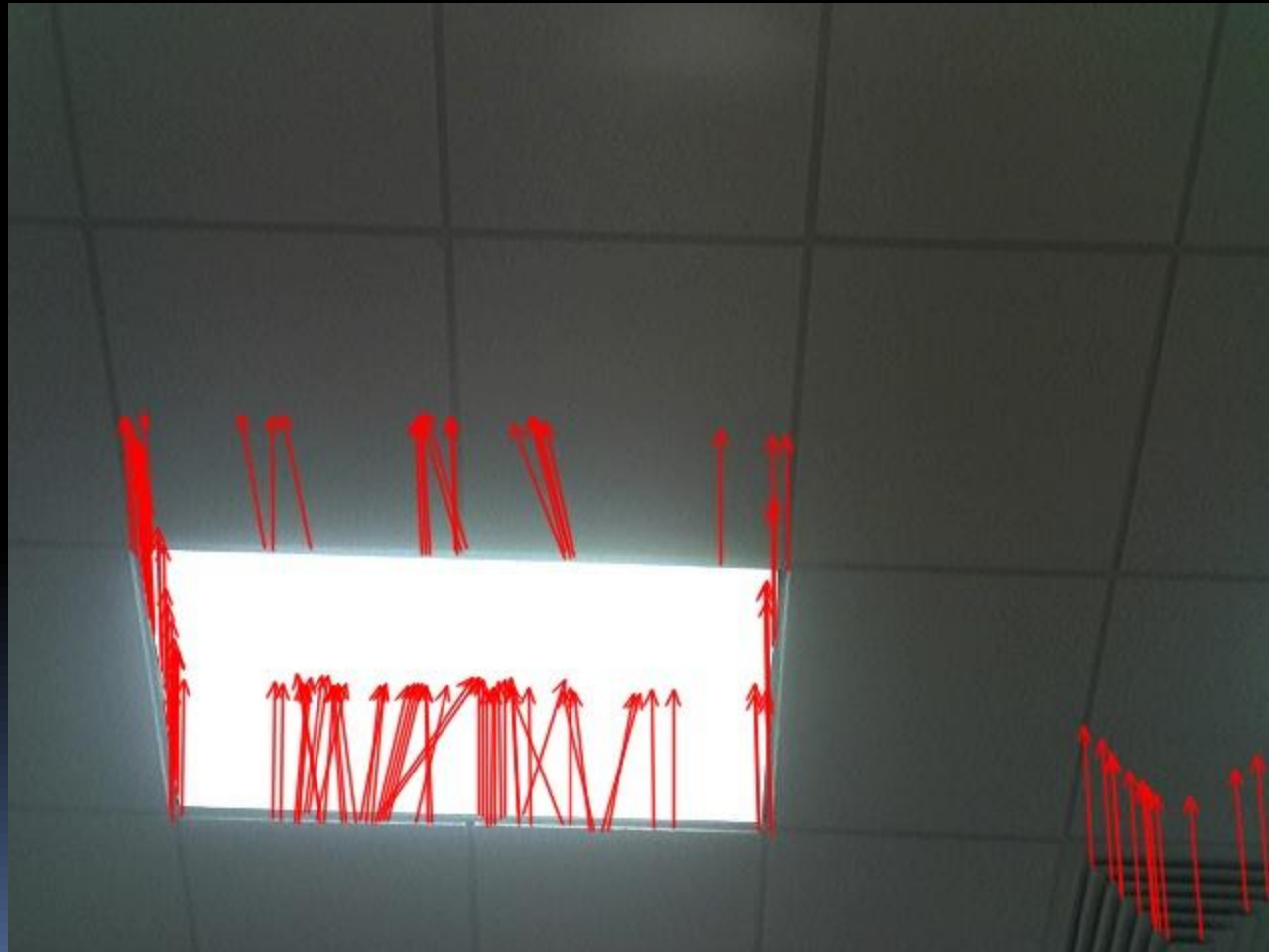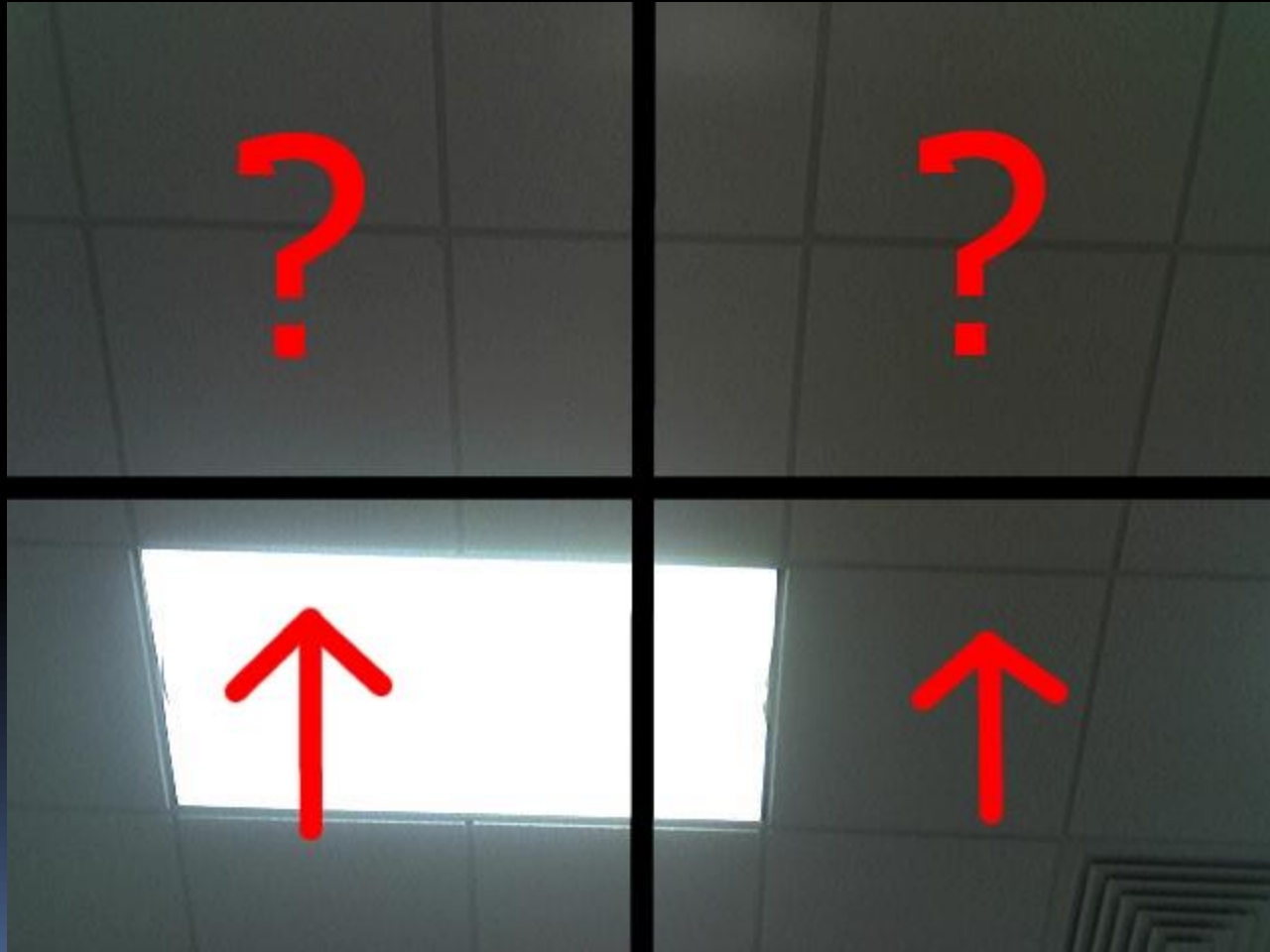- Feature vector is 56 items long

Improving it

Improving It

Improving It

Improving It

Improving It

- Moral: Consider the average optical flow over the whole image plane

- This allows many more great circles and thus greater accuracy

- In practice, using just the whole image plane gives the best results

New Results 2 (Kevin)

- Using the new classifier (Euclidean distance):
  - Without whole image plane averaging:
    - 76.7% average accuracy on Kevin's data
  - Whole image plane exclusively:
    - 87.3 % average accuracy
  - 3x3, 2x2 and whole image plane:
    - 89.3% average accuracy
  - Now test it on the official PaF data set

New Results 3 (PaF)

- Using the new classifier (Euclidean distance):
  - 2x2, 3x3 and whole image plane averaging:
    - 86.2% average accuracy on PaF
  - Whole image plane exclusively:
    - 88.9% average accuracy

- Conclusion: The 2x2 and 3x3 cases are still too noisy in the long run

New Results 4 (PaF)

- Using the new classifier (Manhattan distance)
  - 2x2, 3x3 and whole image plane averaging:
    - 83.6% average accuracy
  - Whole image plane exclusively:
    - 89.6% average accuracy

- Conclusion: Average the whole image plane only and use manhattan distance

Other things

- Sliding window is implemented
  - Real-time gesture recognition works well

- Paper is up to 6 pages (goal of 8)

- Web page is completed

Questions?