



My 2 Cents!

Rama Chellappa

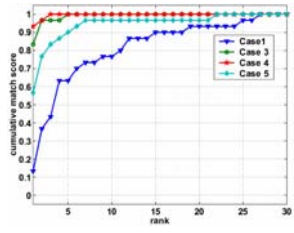


Still Vs Video-Based Biometrics

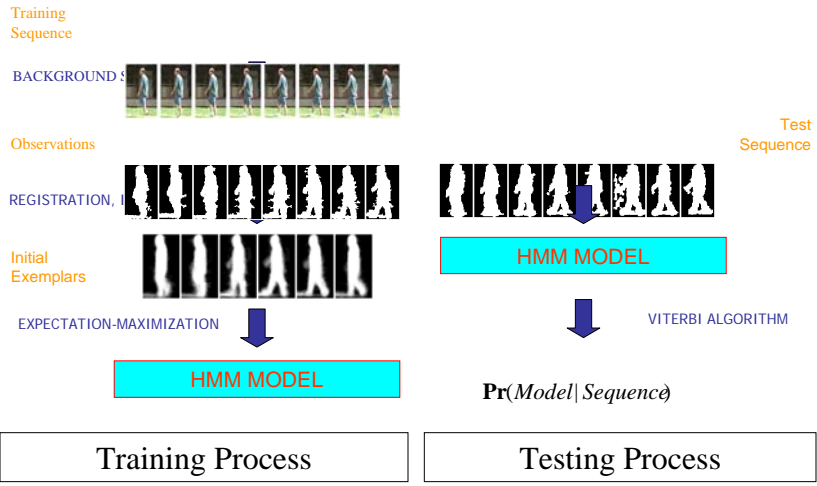
- **Still biometrics**
 - Face, fingerprints, iris, etc
- **Video-based biometrics**
 - Face, gait, 3D flash ladar,..
- **Pros/Cons of video-based biometrics**
 - More data, better performance
 - Motion cues come into play
 - Can be naturally integrated into surveillance systems



Video-based Face Recognition



Gait-Based ID of Humans





Recent Results on USF Data

- 70 people, upto 10 sequences per person
- Variabilities: shoe type, surface, view point.

Table 1. Comparison of Identification rates on the USF dataset

Pr- obe	Base- line	DTW Shape	HMM Shape	HMM Image	DTW R-R	Our method
Avg.	42	42	41	50	42	59
A	79	81	80	96	52	70
B	66	74	72	86	52	68
C	56	52	56	74	72	81
D	29	29	22	32	33	40
E	24	20	20	28	26	64
F	30	19	20	17	26	37
G	10	19	19	21	36	53

Baseline : [Sarkar 2005]
 DTW Shape, HMM Shape : [Veeraraghavan 2004]
 HMM Image : [Kale 2004]

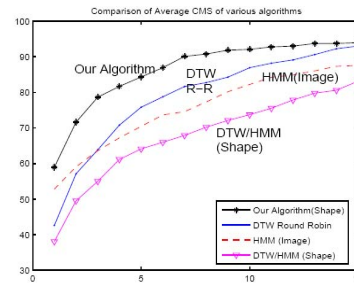
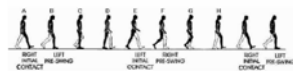


Figure: CMS curve for various algorithms on the USF database.



Gait Analysis for Activity Modeling

- X-Y Periodicity



- X-Y-t gait manifold

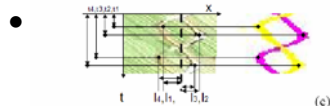
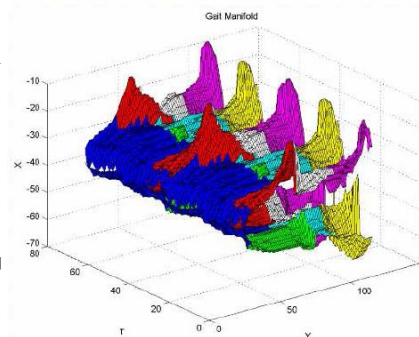


Figure 3: Parameter illustration for motion signature: 2D X-t slice at y=107 for USF 02463G2AR

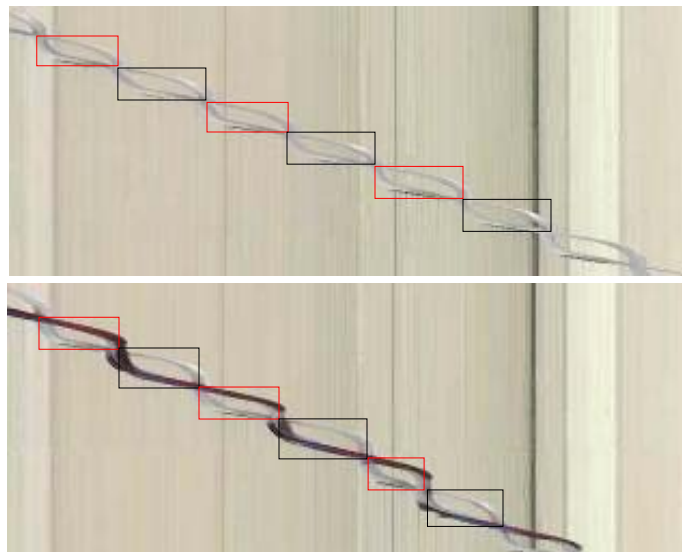


Video Demo: Carrying Objects



Hidden Load Detection (With Mr. Jeremy C. Webb)

Free walk vs. 15lb





Challenges

- Handling illumination/pose changes
- Large scale evaluations
- Fusion of face and gait
- Real-time implementations
- Integration with surveillance systems