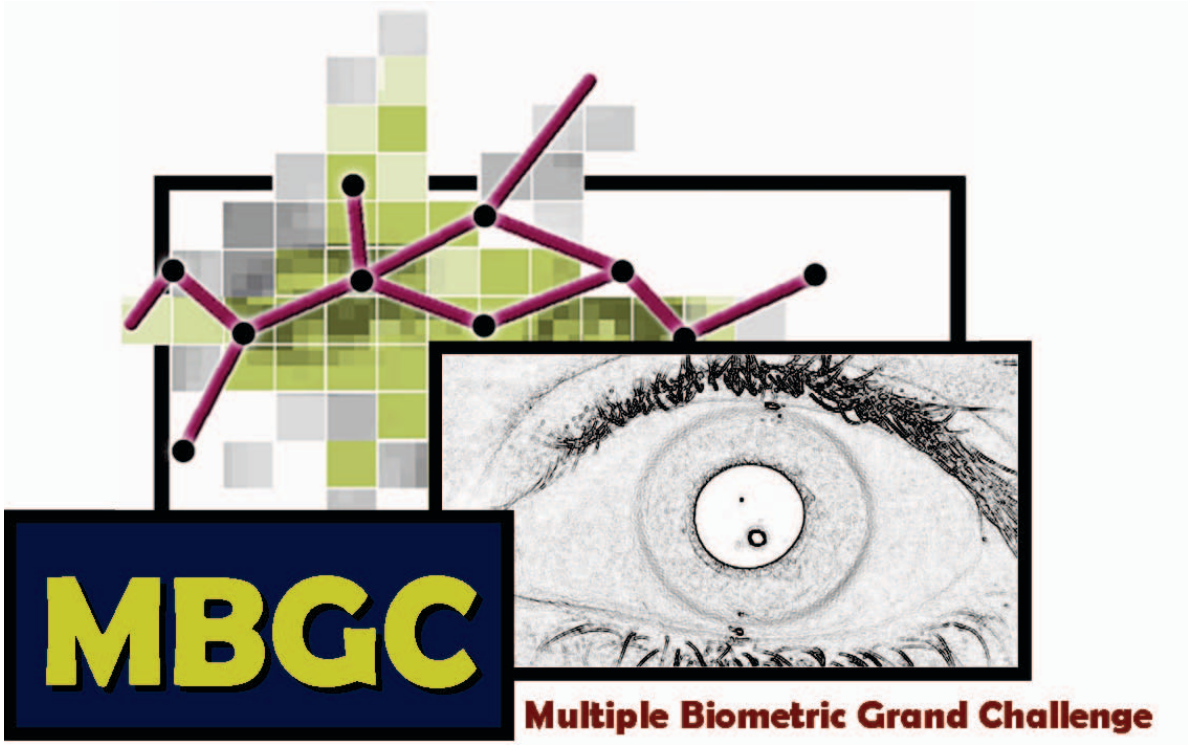


Video Challenge Problem
Multiple Biometric Grand Challenge
Preliminary Results of Version 2

04 December 2009

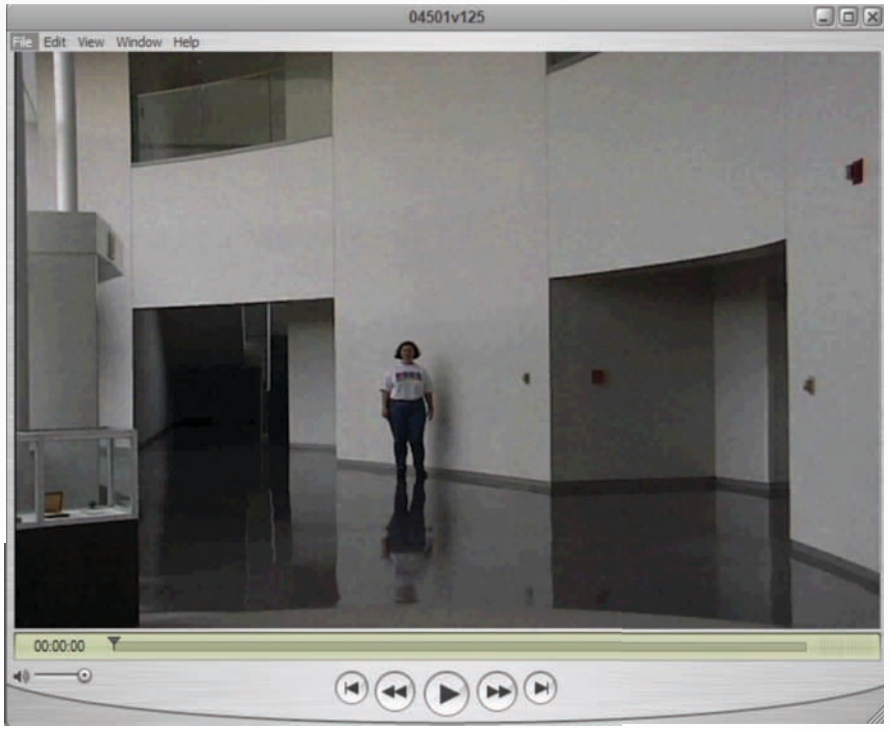
Goals and Motivations

- Operational environment
  - Recognition from video.
  - Unconstrained illumination.
  - Unconstrained movement / pose.

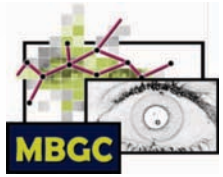
Meet the Data
University of Notre Dame

- Two different mediums of video.
  - High definition video (1440 x 1080)
  - Standard definition video (720 x 480)

Meet the Data
University of Texas at Dallas



Both Data Sets Contain



- Walking footage
  - Subject walks towards camera.
- Activity / Conversation footage
  - Non-frontal footage of subject performing an activity / conversation.

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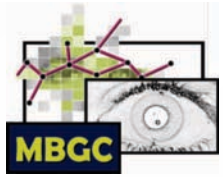
Video Challenge Submissions



Organization
Pittsburgh Pattern Recognition

Walking vs. Walking

Notre Dame

976 sequences

Notre Dame

976 sequences

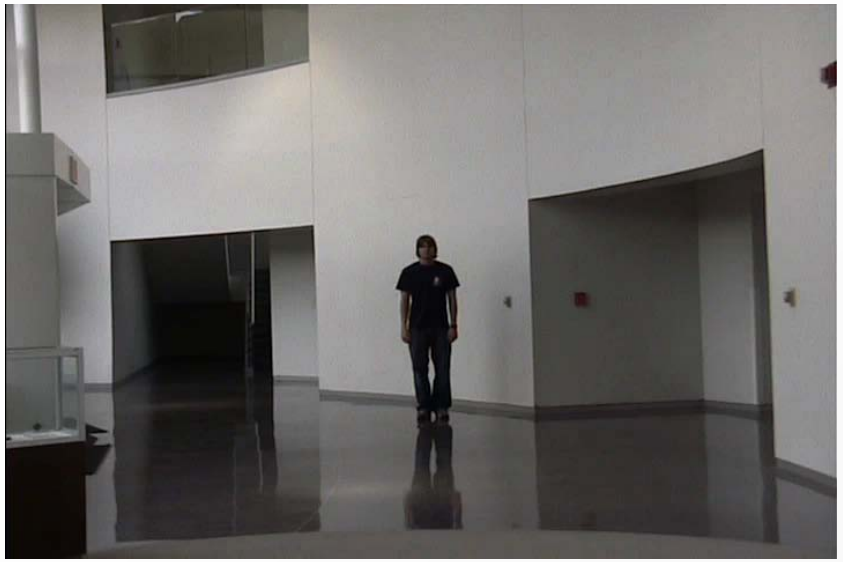
Standard Definition

976 sequences

Standard Definition

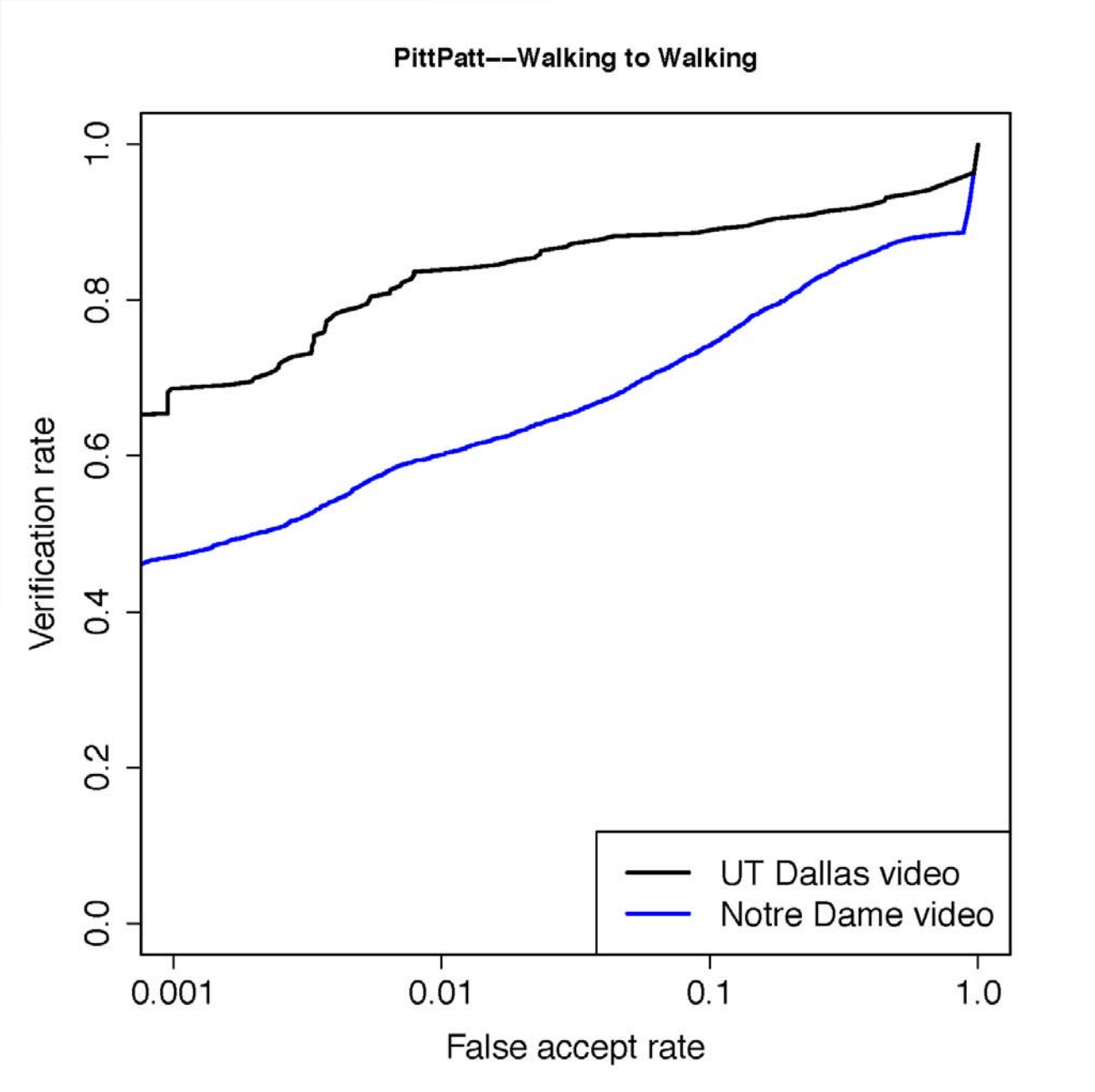
976 sequences

University of Texas at Dallas
Walking vs. Walking



487 sequences

Walking vs. Walking Results



Results from an Open Book Challenge Problem, NOT an Independent Evaluation

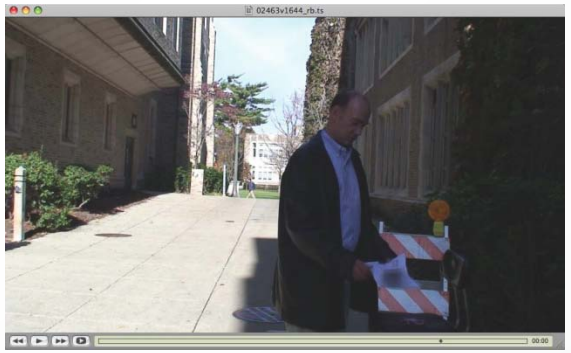
Walking vs. Activity
Activity vs. Activity

Walking

976 sequences

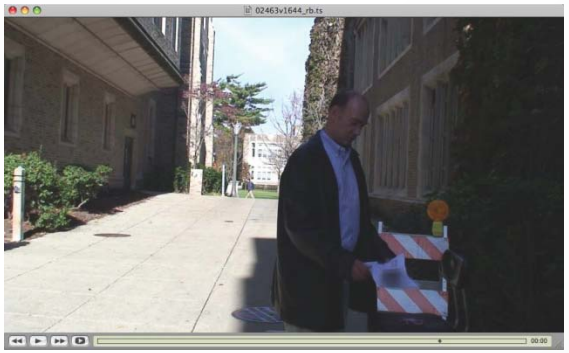
Activity

784 sequences



Activity

784 sequences

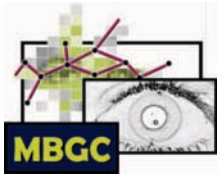


Activity

784 sequences

Experiment uses both high definition and standard definition.

Walking vs. Activity ROC
Activity vs. Activity ROC



NO SUBMISSIONS

Results from an Open Book Challenge Problem, NOT an Independent Evaluation

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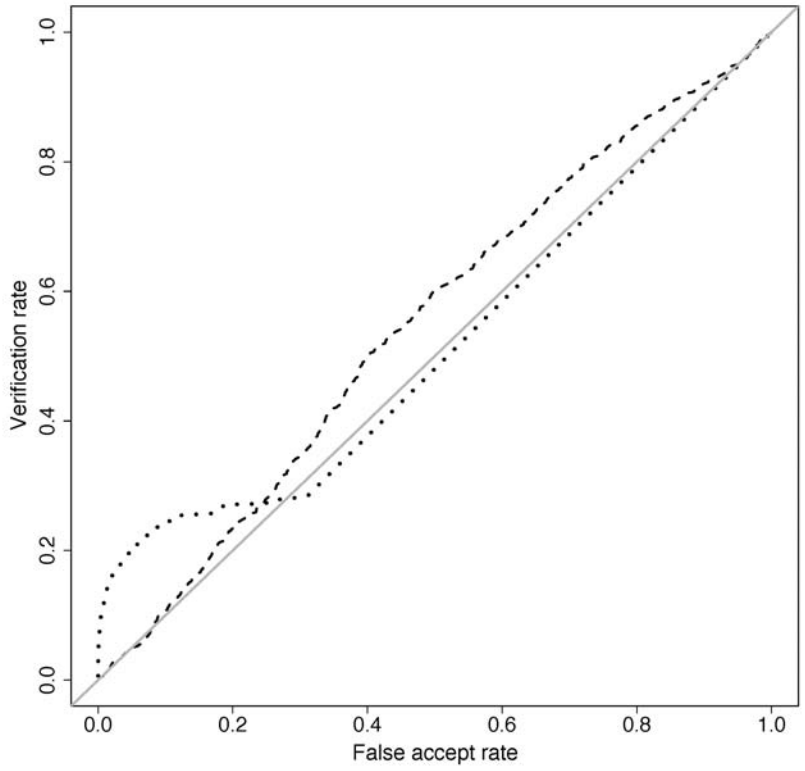
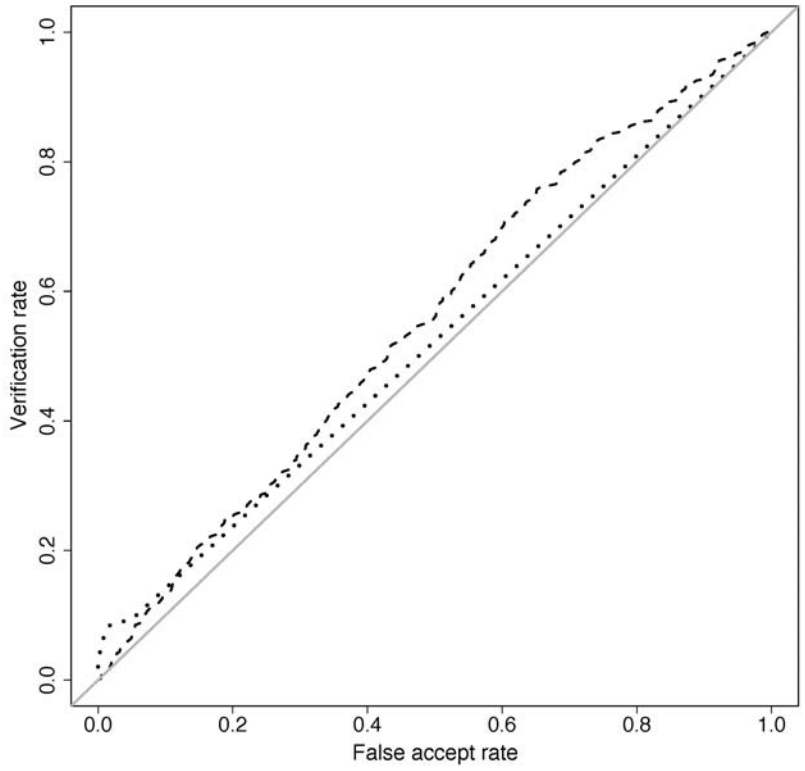
Walking vs. Activity ROC
Activity vs. Activity ROC

Reigning Champions from MBGC V1 2008

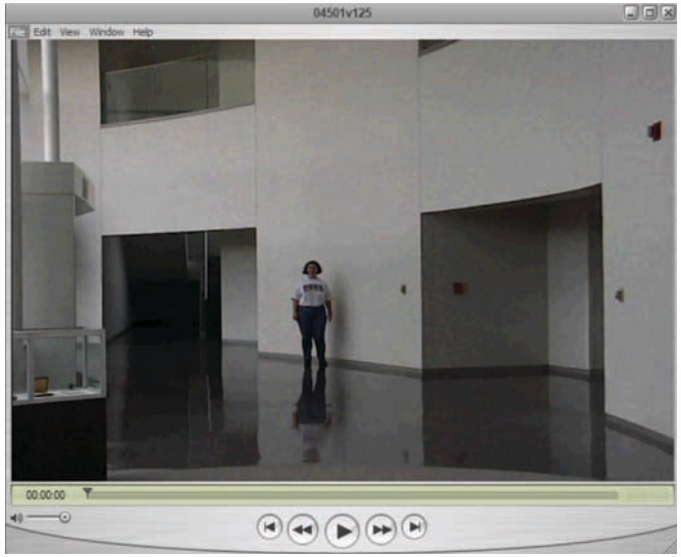




Results from an Open Book Challenge Problem, NOT an Independent Evaluation

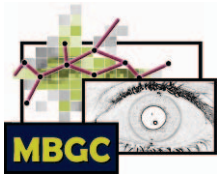
University of Texas at Dallas
Walking vs. Conversation
Conversation vs. Conversation

487 sequences



482 sequences

NO SUBMISSIONS



Human Benchmarking with Video

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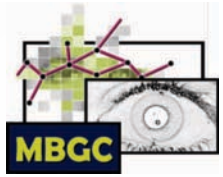
Information in Surveillance Video

What is helpful for recognition?



- multiple images of face
- multiple images of body

- dynamic information about gait
  - "dynamic identity signatures"

- facial motion

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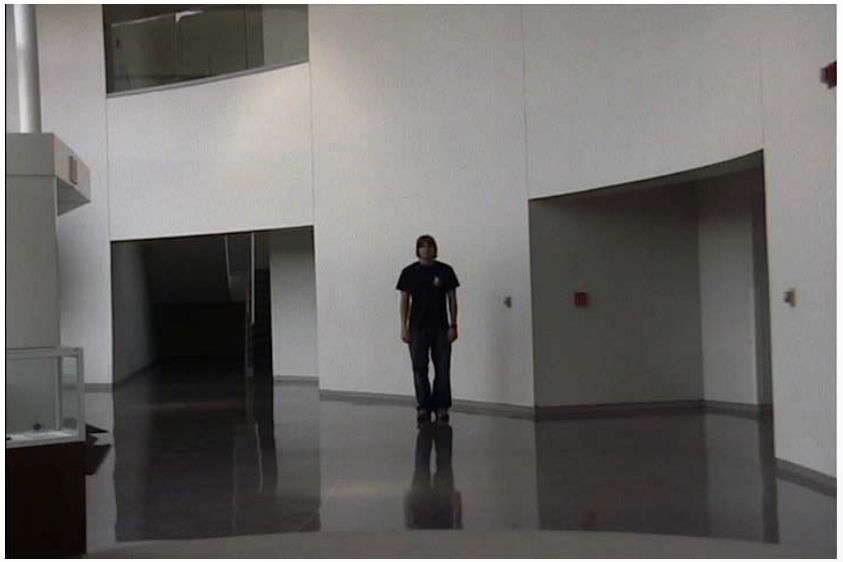
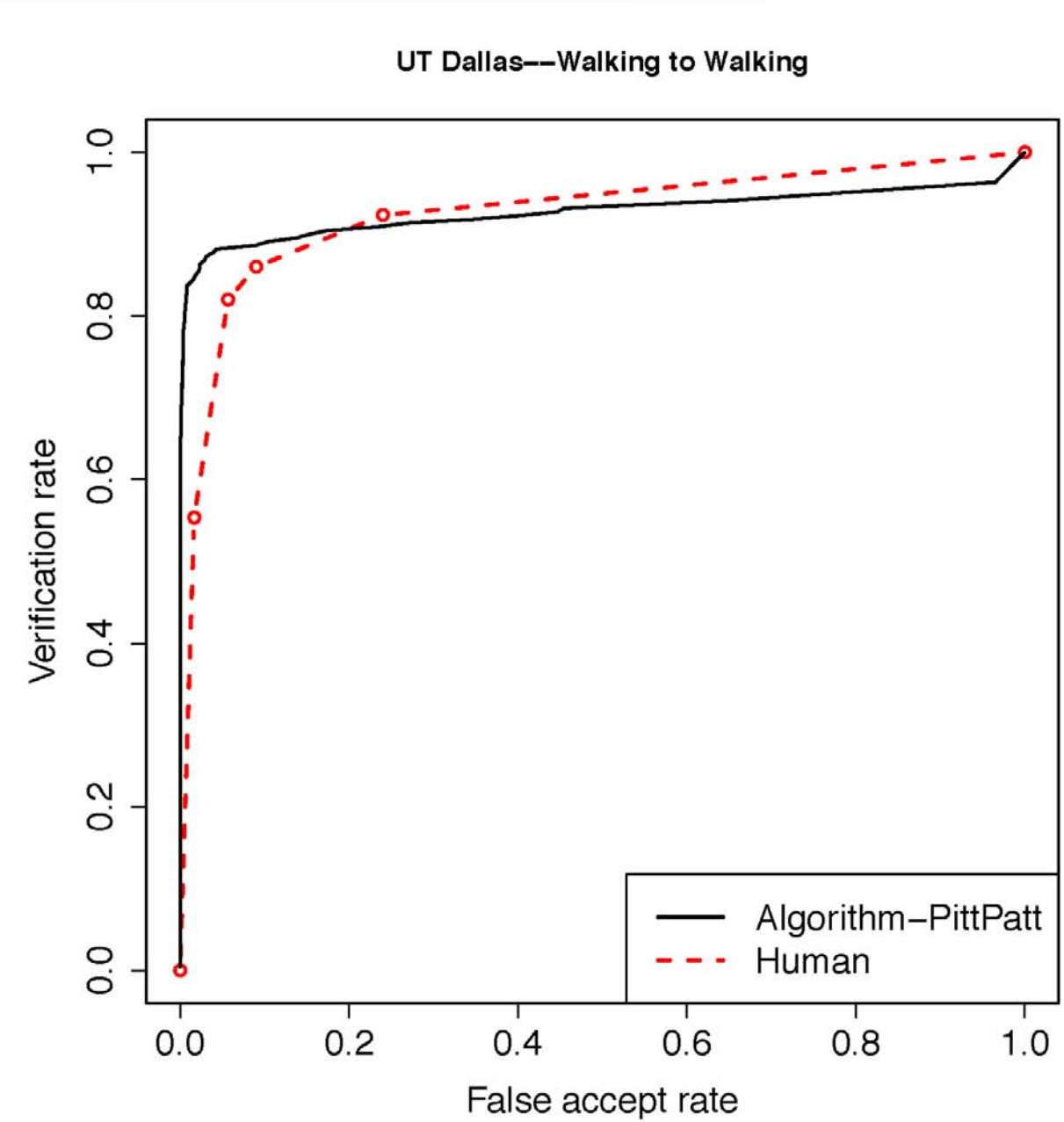
Walking - Walking



- Human subject raters respond…
  - 1. sure they are the same person
  - 2. think they are the same person
  - 3. not sure
  - 4. think they are not the same person
  - 5. sure they are not the same person

Machine & Human Performance



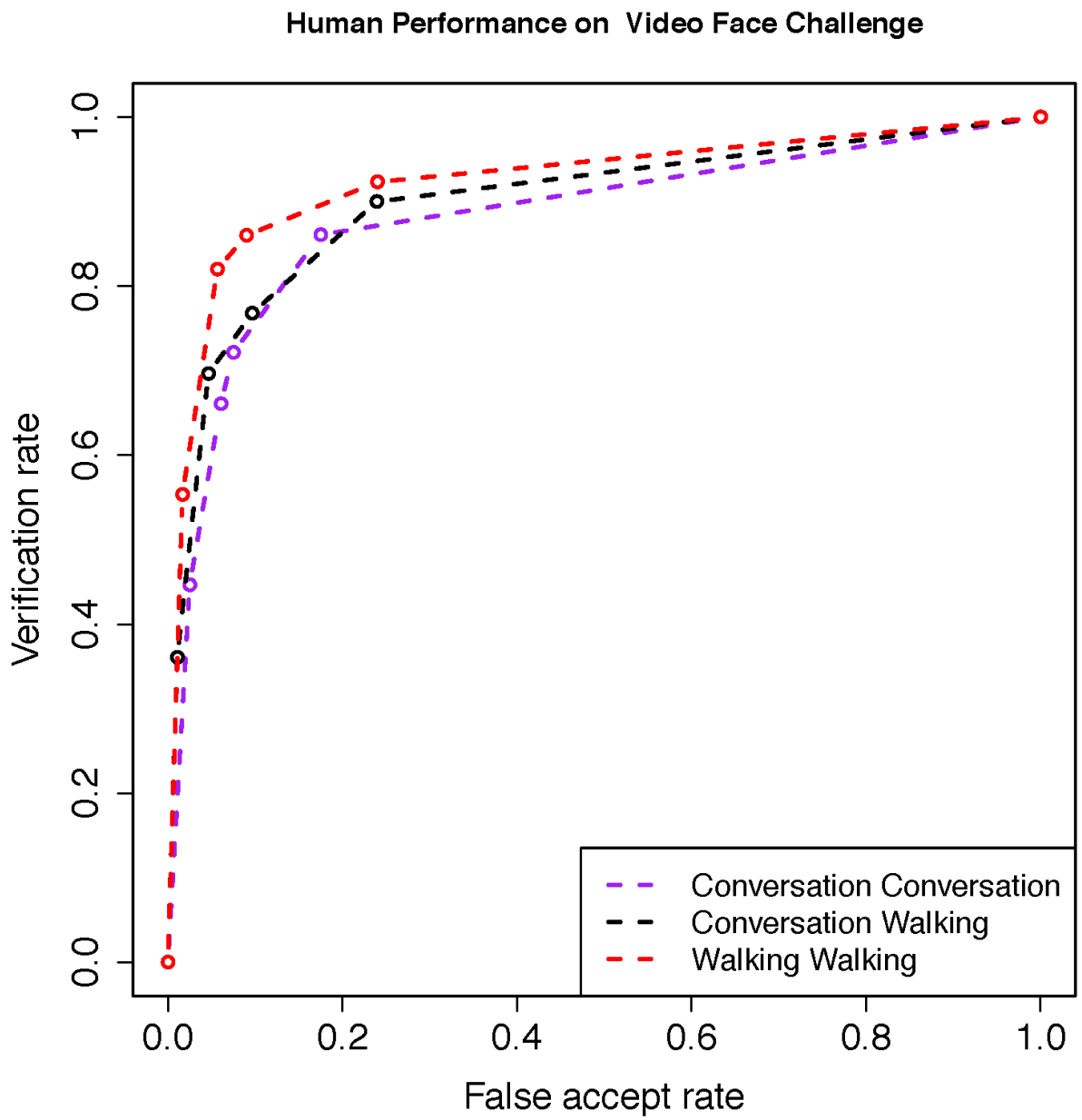
Walking - Conversation

- Human subject raters respond…
  - 1. sure they are the same person
  - 2. think they are the same person
  - 3. not sure
  - 4. think they are not the same person
  - 5. sure they are not the same person

Conversation - Conversation

- Human subject raters respond…
  - 1. sure they are the same person
  - 2. think they are the same person
  - 3. not sure
  - 4. think they are not the same person
  - 5. sure they are not the same person

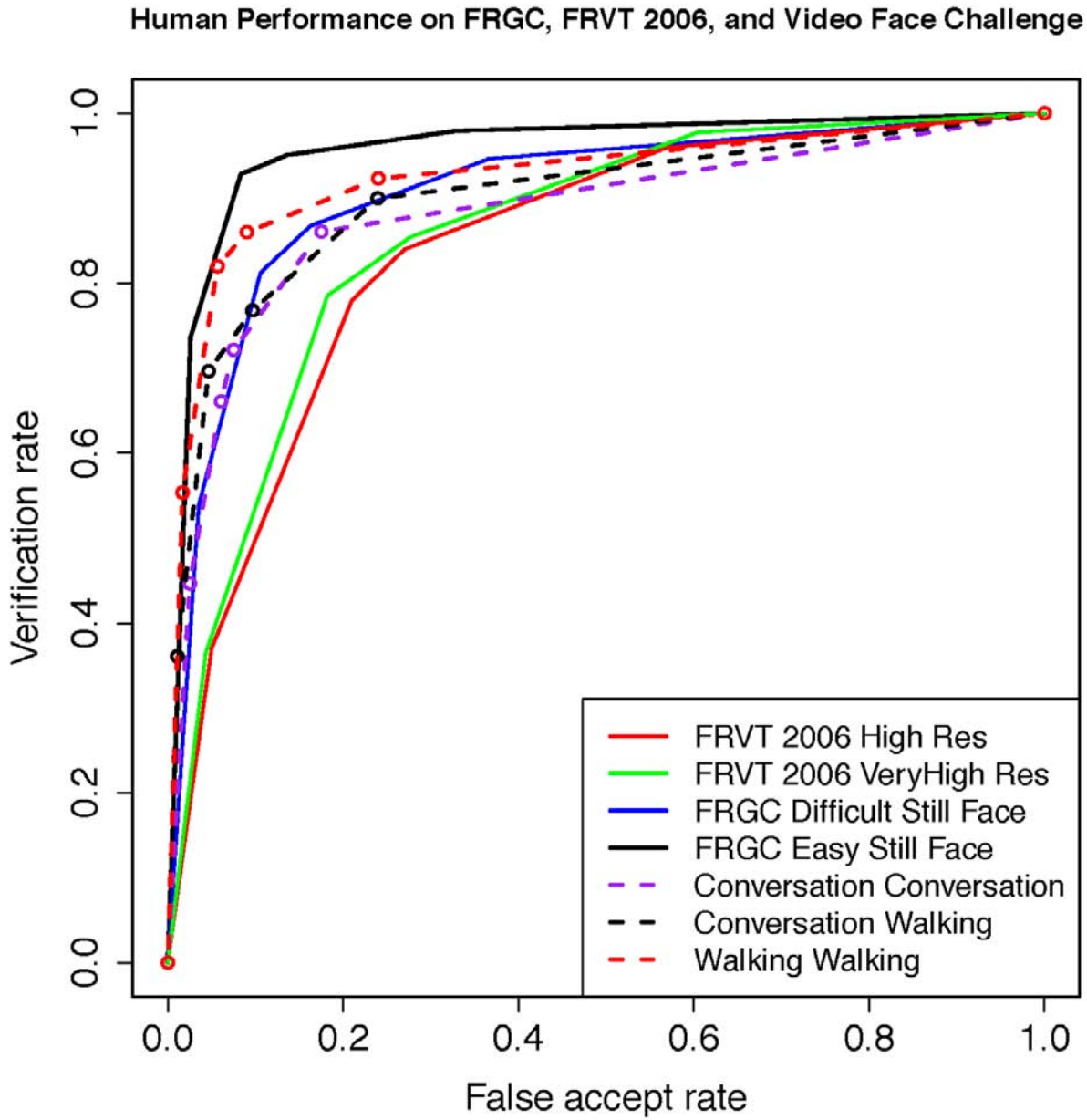
Performance All Video Conditions



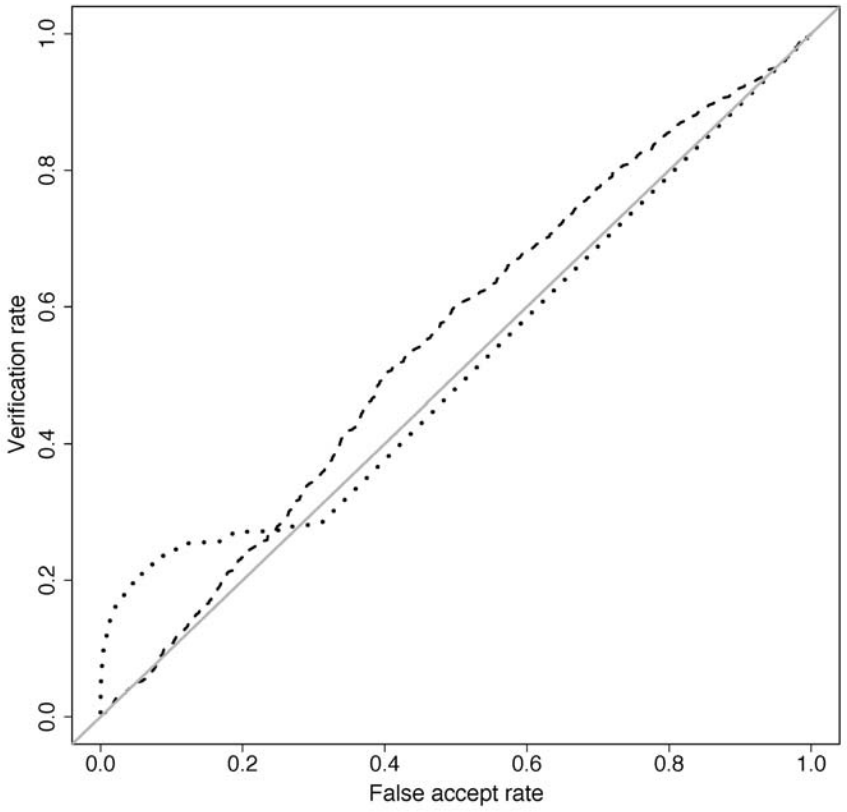
Human Performance Face Stills

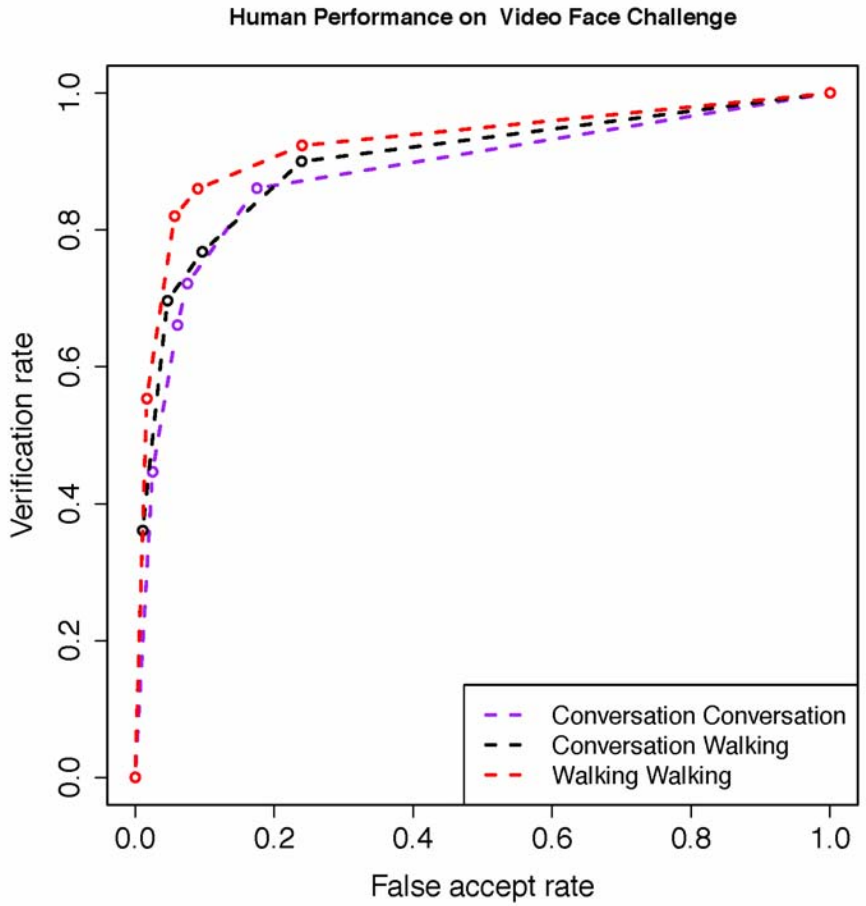
- Human subject raters respond…
  - 1. sure they are the same person
  - 2. think they are the same person
  - 3. not sure
  - 4. think they are not the same person
  - 5. sure they are not the same person

Video and Still

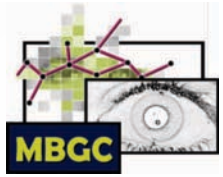


There is Head Room





Summary



- New challenges
- Algorithms cannot handle non-frontal activity
- Human benchmark

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