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eNTERFACE '07
The SIMILAR NoE Summer Workshop on Multimodal Interfaces

Benchmark for Multimodal Authentication

Project 12

hosted by Boğaziçi University, Multimedia Group

Team Members

- Project leaders:
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Background

- Standard strategies to identify multimedia signals:
  - General purpose: Robust Hashing (aka Perceptual Hashing, Fingerprinting)
  - Tailored: Feature Extraction Methods
- Usually reliant on one single modality (image, audio)

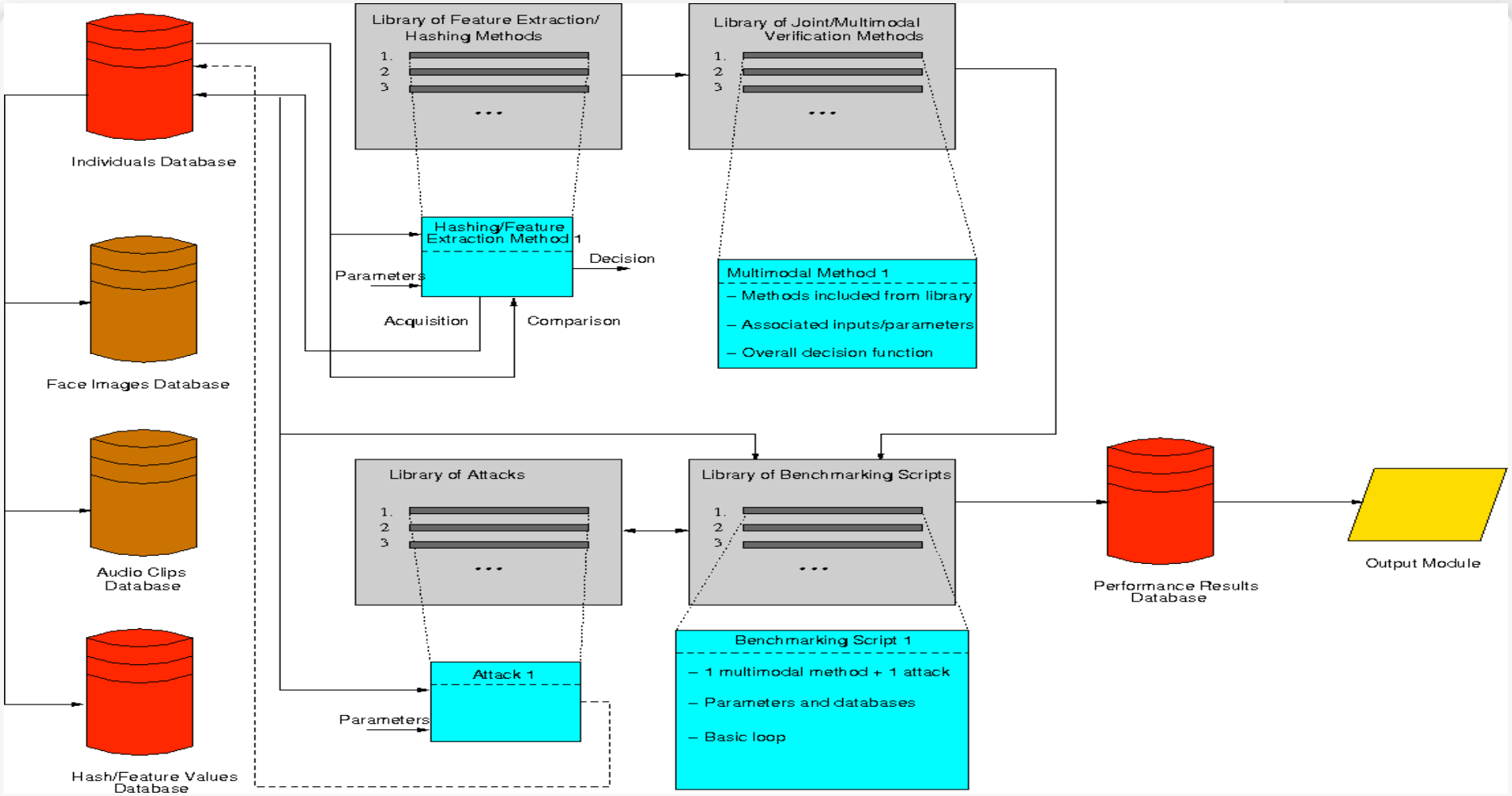
Multimodal Approaches

- Monomodal methods. Two types:
  - Generic signals: images/audio
  - Specific signals: face images, fingerprint images
- Multimodal methods
  - Combinations of two or more types of standard monomodal methods
  - Multimodality affords higher performance

The Need for Benchmarking

- Issues
  - What is the gain provided by multimodality?
  - What are the best multimodal combinations of monomodal methods?
  - How do they perform in different scenarios?
- Benchmarking
  - Helps to easily *define* multimodal approaches
  - Helps to routinely test & compare the performance of these approaches
  - Analytic comparisons are sometimes difficult

Benchmark Structure



Benchmark Functions

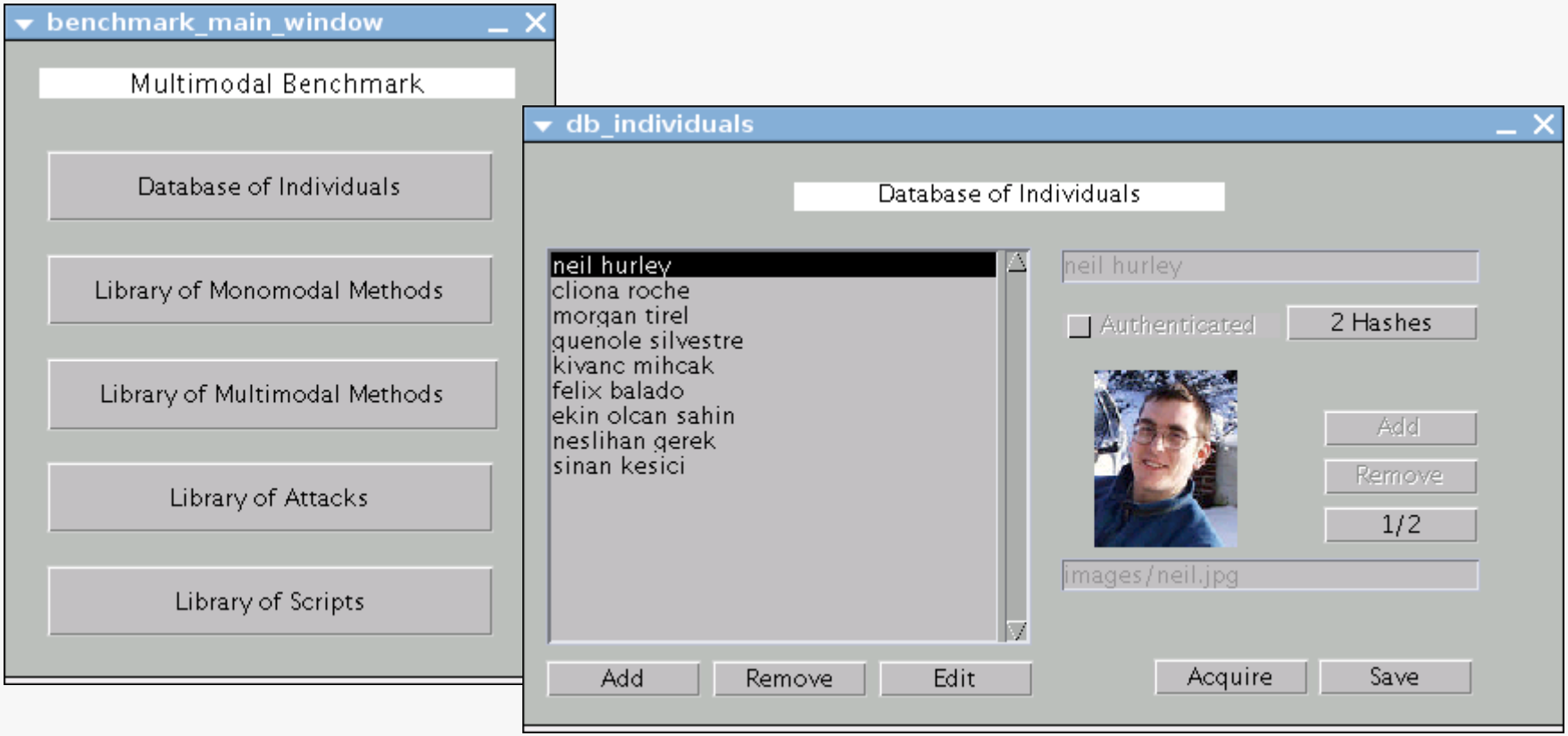
- Initial monomodal functions:
  - image hashing:
    - iterative geometric hashing
    - pseudo-random statistics quantization
  - audio hashing:
    - Philips method
    - Microsoft method
    - Bogacizi method
- Attacks
  - noise distortion
  - chimeric characters

Benchmark Implementation

- Architecture:
  - Mysql database
  - Matlab source code, both for
    - GUI
    - robust hashing/feature extraction methods
- Advantages:
    - fast implementation
    - flexibility and extendability
    - interfaceable with other languages (through Mex files)

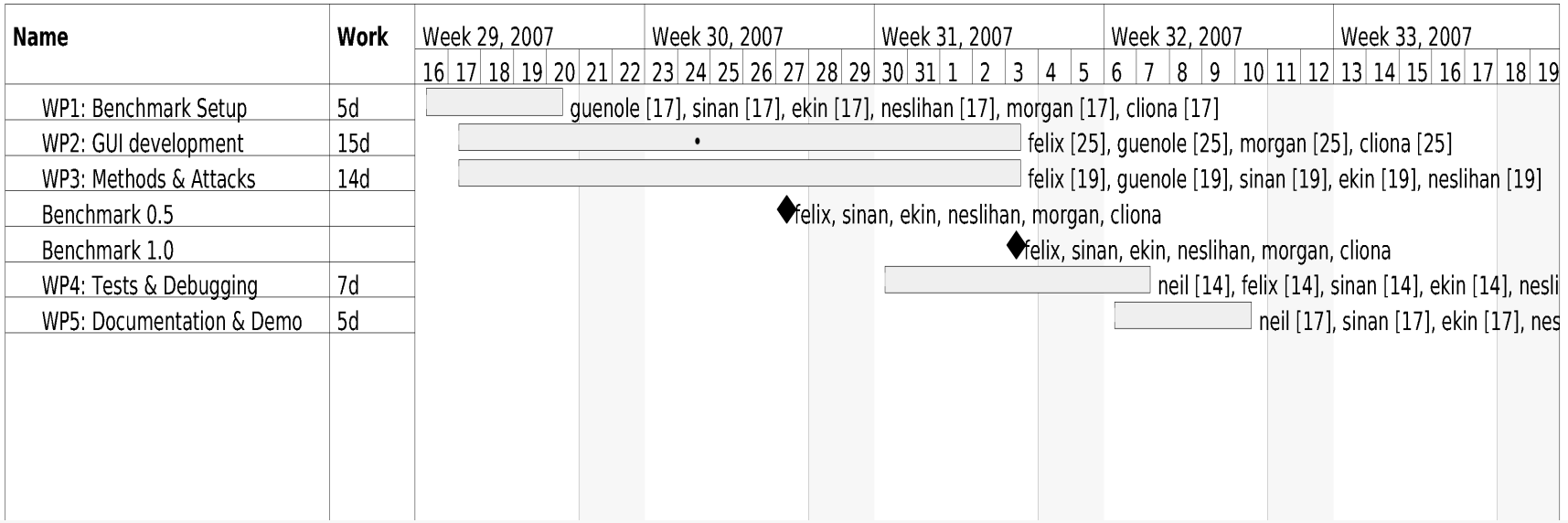
Sample Benchmark Windows

- GUI development



Project Schedule

- 5 Workpackages, 2 Milestones



- Thank you