

Exploring Sensors & Actuators for Immersive Learning Scenarios



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Centre for Learning Sciences and Technologies
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Sensors & Actuators

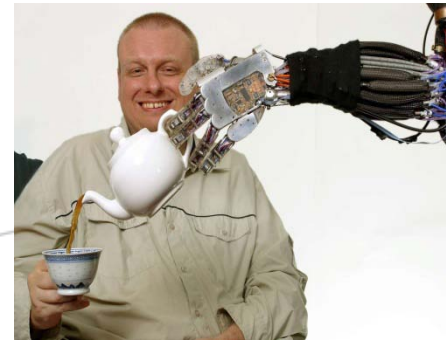
Affordances of Sensors

- ***Continuous non-disruptive data gathering of user (behavior, biodata)***
- **Continuous data gathering of environment of user**



Affordances of Actuators

- **Can influence environment**



Goals

- **Enhance learner support**
- **Sustain 'Flow'**

Exploring sensors for ILS page 2

(emotional + cognitive states)



Categories of Sensors

- *Physiological sensors irt affection detection (face & voice emotion)*
- *Physiological sensors irt biodata (heartbeat, EEG, skin resistance)*
- *Motion sensors (physical movement)*
- *Orientation sensors (physical orientation)*
- *Location sensors (geographic location)*
- **Scanning sensors (barcode, RFID)**
- **Electrical sensors (electrical systems)**
- **Environmental sensors (surroundings, weather a.s.o.)**
- **Light sensors (light characteristics)**
- **Mechanical sensors (mechanical devices, instruments)**
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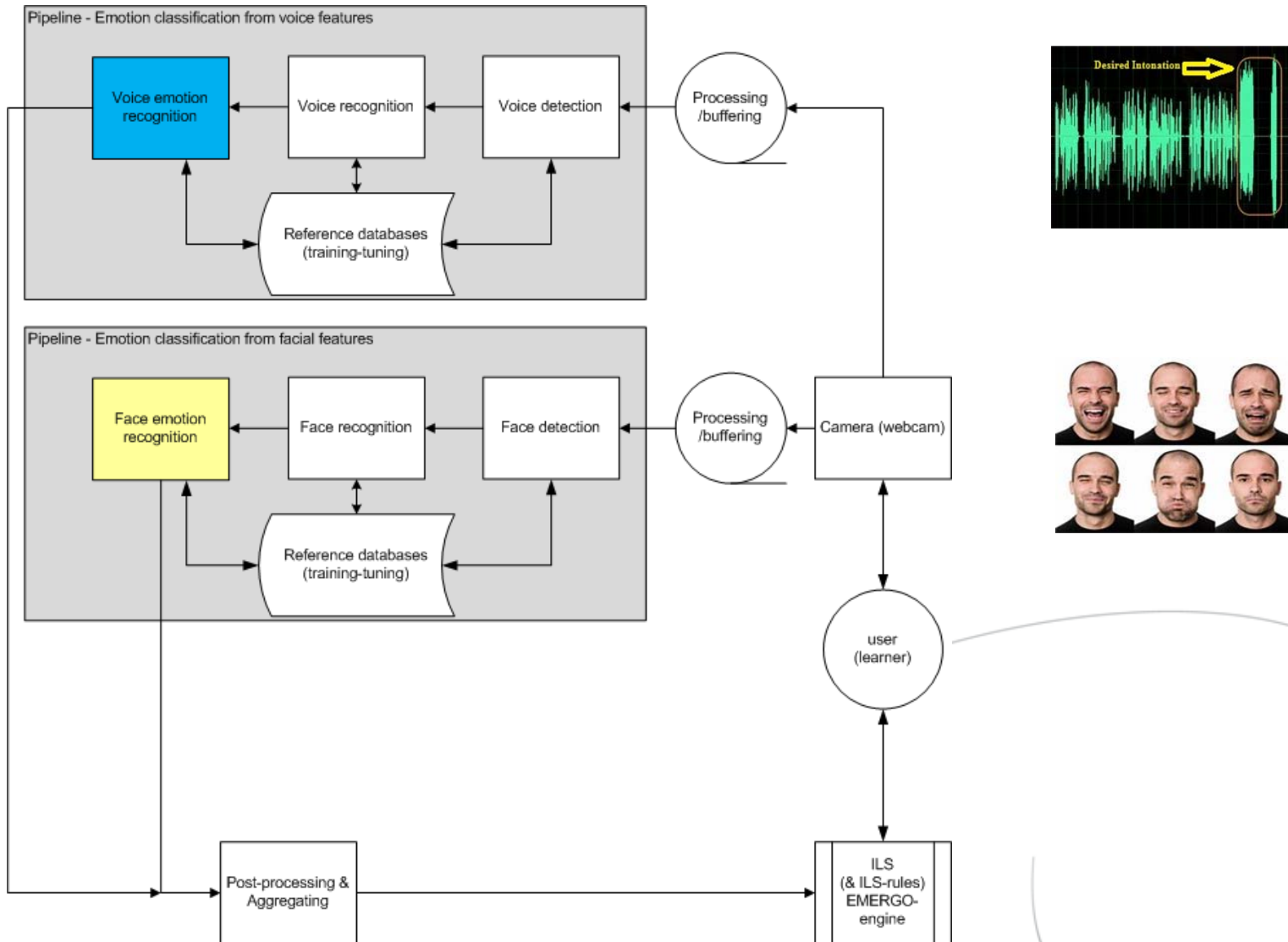


Tasks – planned, ongoing and iterative

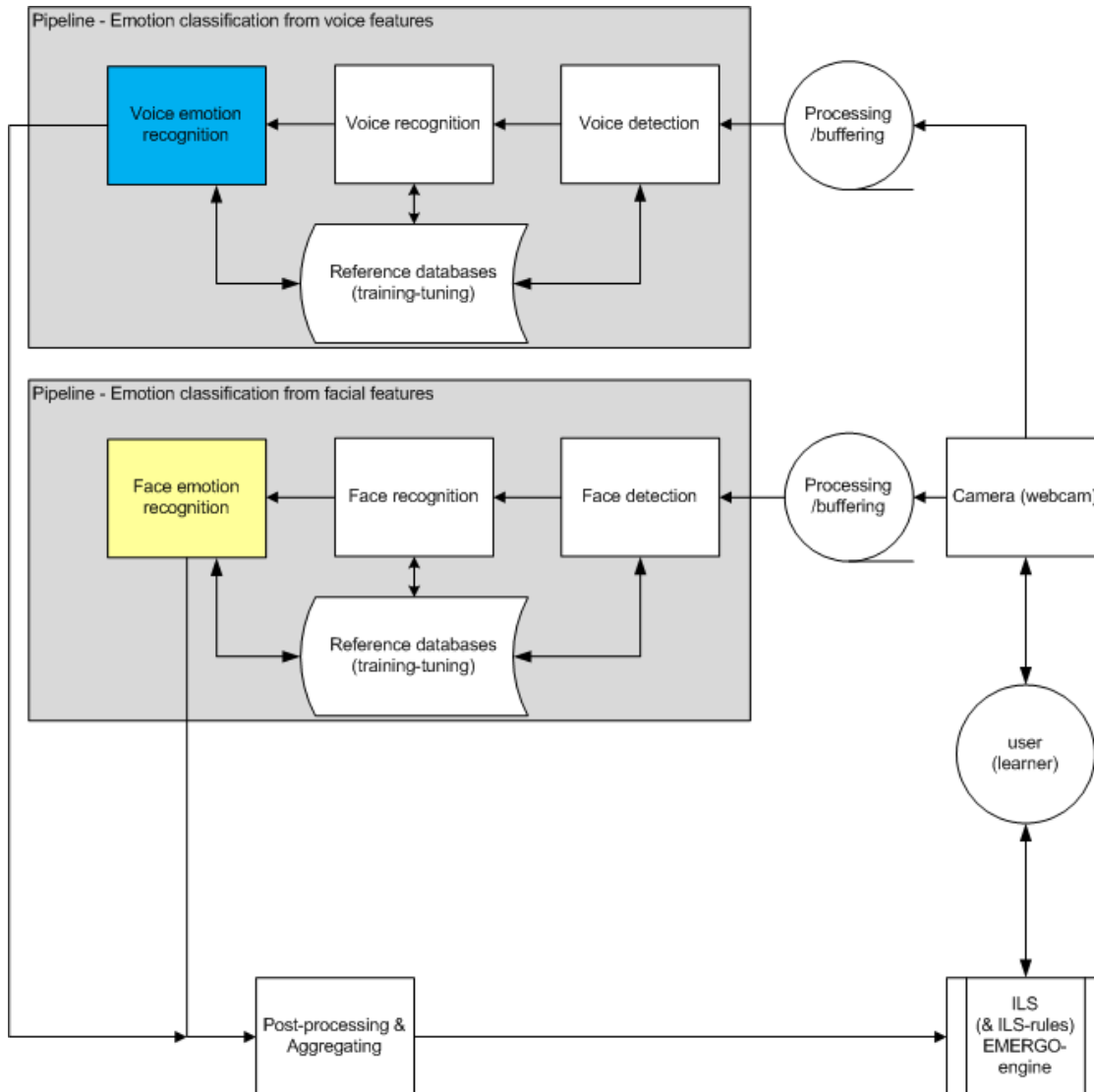
- Inventory equipment and software
- Define conceptual & technical framework
- Order additional equipment and software
- Technical setup
- Demonstrator (sensor room)
- Refine conceptual & technical framework
- Define pilots and link with PhDs, proposal(s)
- Run experiments
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Example: Architecture – face & voice emotion recognition



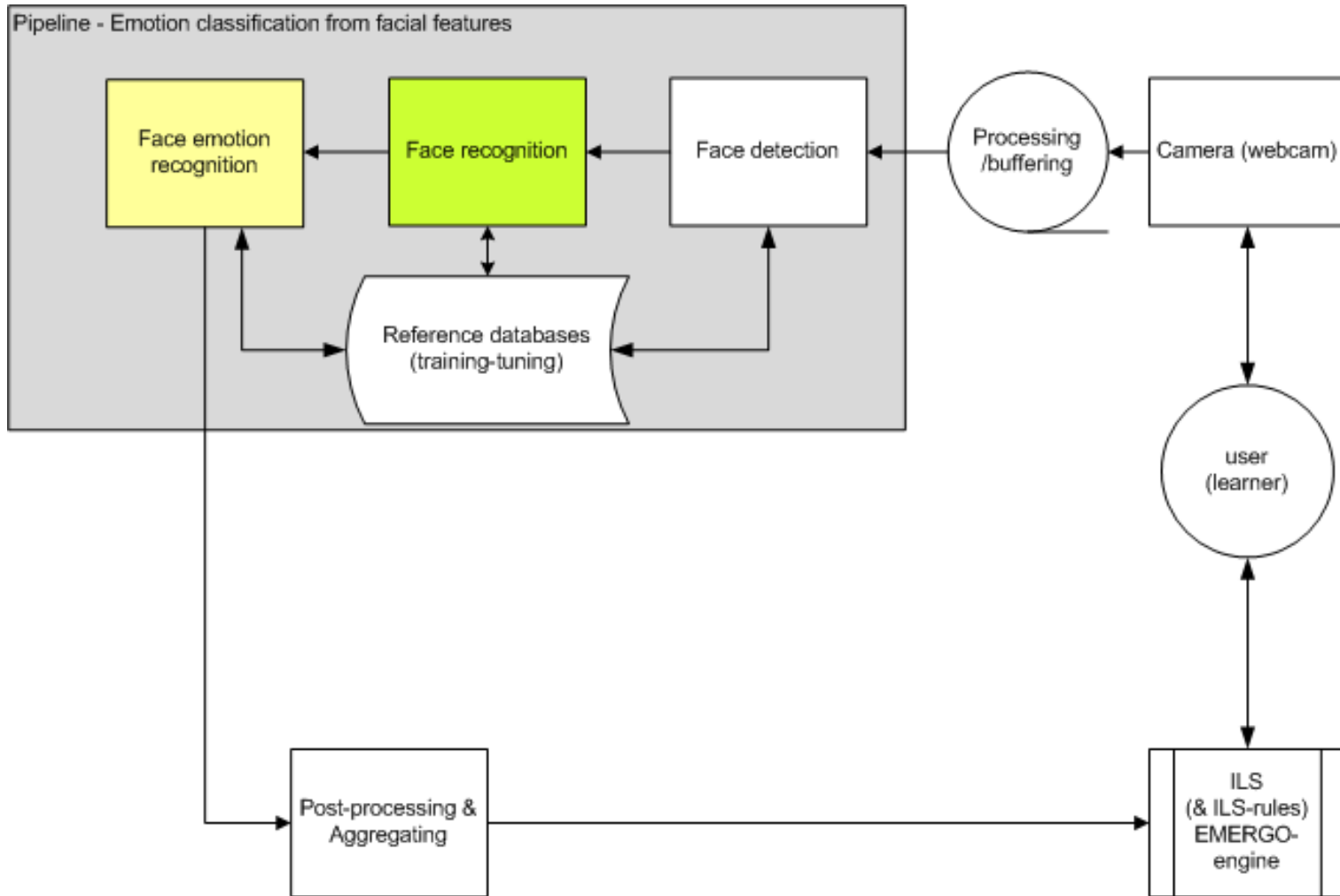
Example: Architecture – face & voice emotion recognition



- PhD- Soft skills training (awareness of behavior) (training (a) 'non-verbal' & (b) intonation) [Kiavash]
- ***Stress & Learning: Emotional state (ES)***
- **Others sensors for ES (posture,)**
- **Sensors for Cognitive State**
- **Combine ES & Cognitive State**



1st Pilot– face emotion recognition (calibration)



Discussion & Questions



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Thank you for your attention ...

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