

DejaView

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Help with memory,
when you need it

SenseCam 2012
Oxford, UK

Outline

- Human memory and electronic aids
- DejaView: system overview
- DejaView: video/demo
- Challenges: latency, energy, and context

Memory tasks

- Distinct subsystems
- Remembering about the past (**retrospective**)
 - Recalling past experiences (**episodic** memory)
 - Knowing facts (**semantic** memory)
- Remembering future plans (**prospective** memory)

History of memory aids



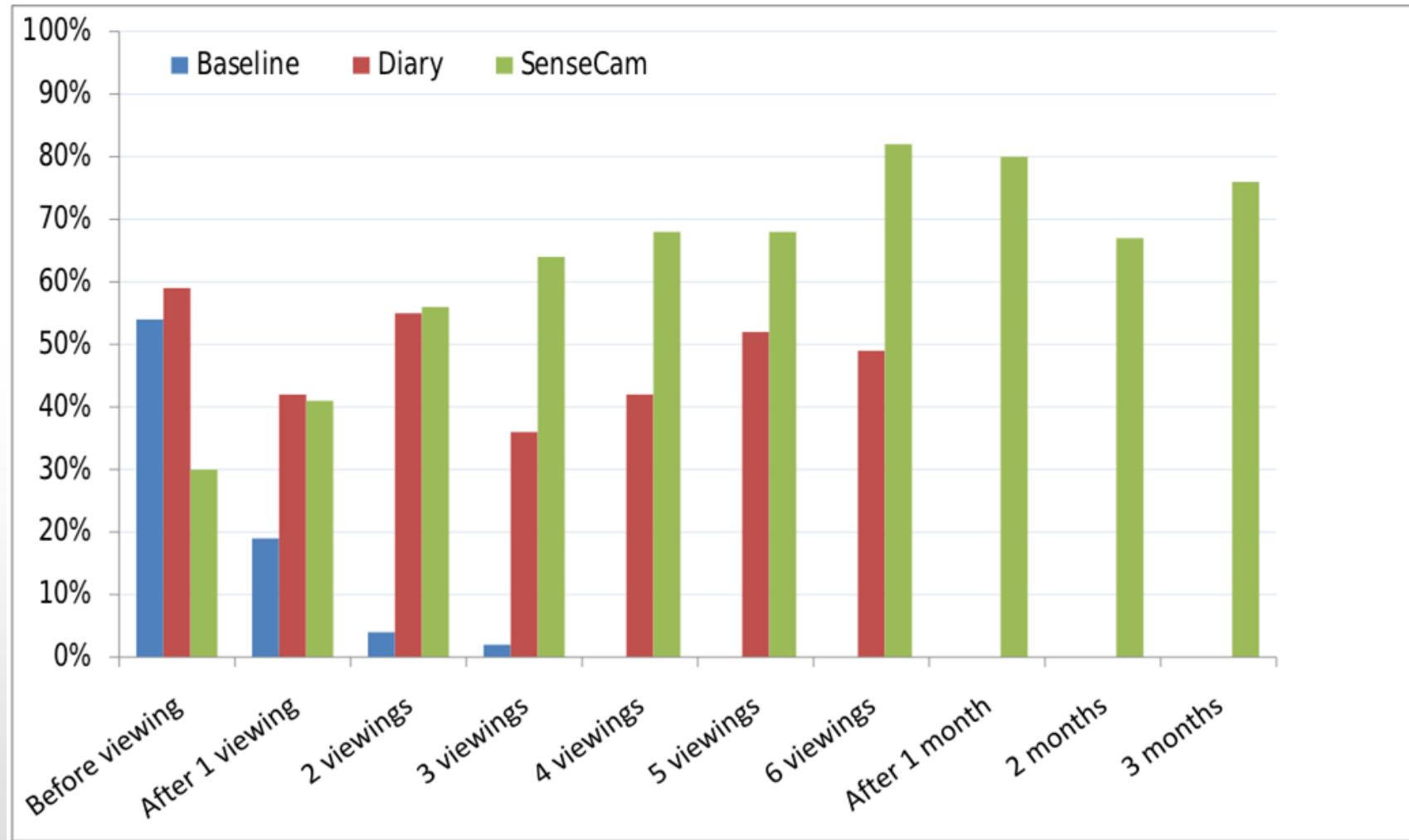
SenseCam for memory problems

- Automatic camera worn around the neck
- Photos reviewed periodically ‘**in reminiscence**’ using SenseCam viewer



SenseCam for memory problems

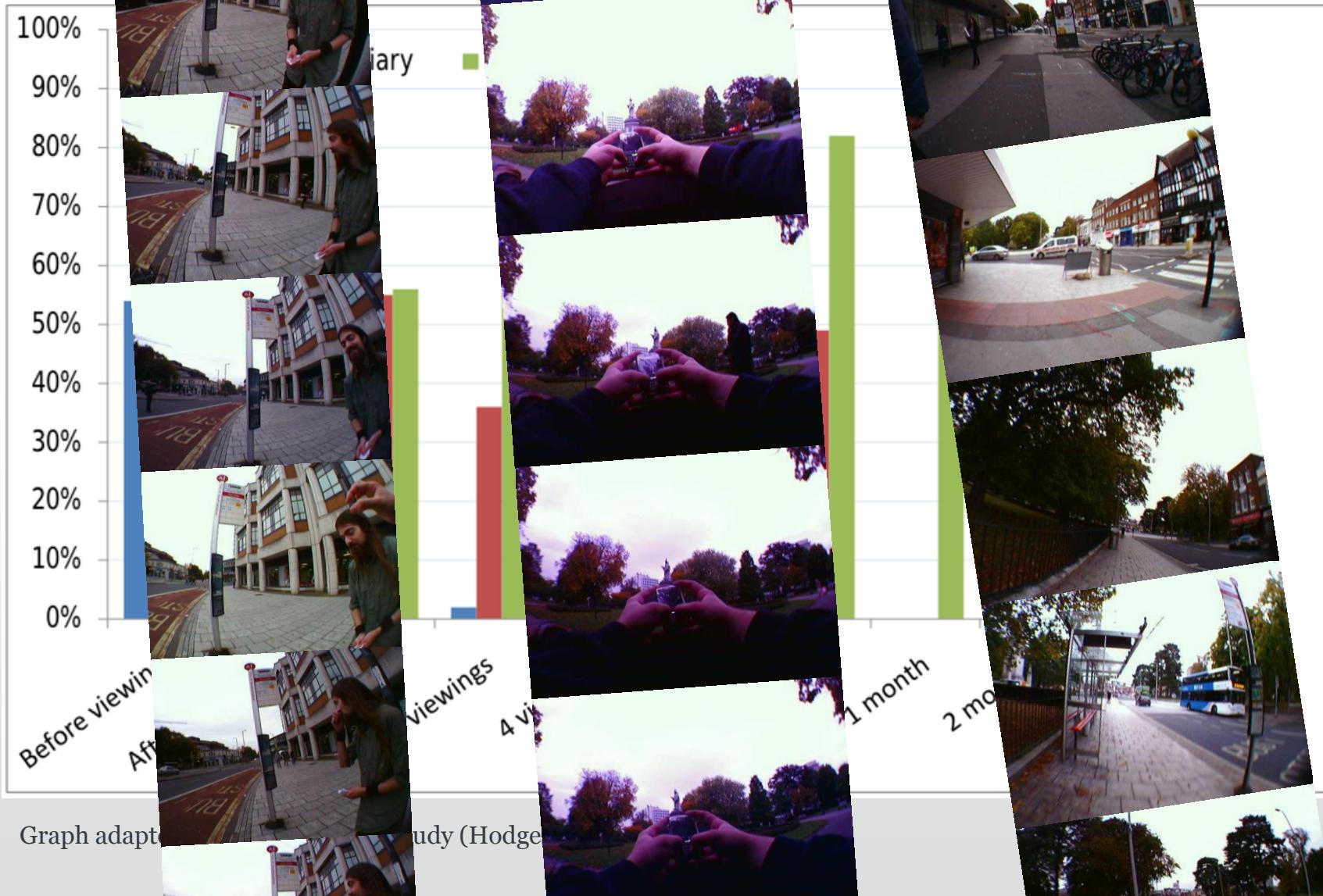
Average recollection of details of a number of interesting events, for a person with memory problems



Graph adapted from 'Mrs. B' case study (Hodges, et al., 2006)

Sensor for navigation

Average details of a diary



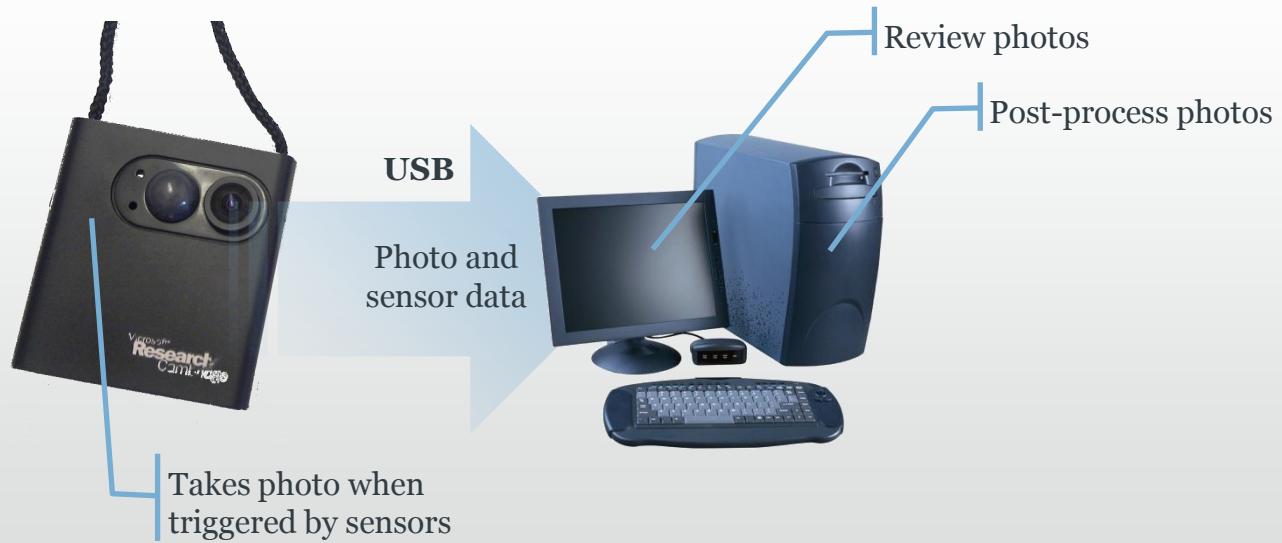
SenseCam extensions

- Grouping images by visual similarity (Smeaton, 2006)
- Detecting faces (Smeaton, 2008)
- Using location with GPS (Byrne, 2007)
- Working out activity from movement (Qiu, 2010)



SenseCam architecture

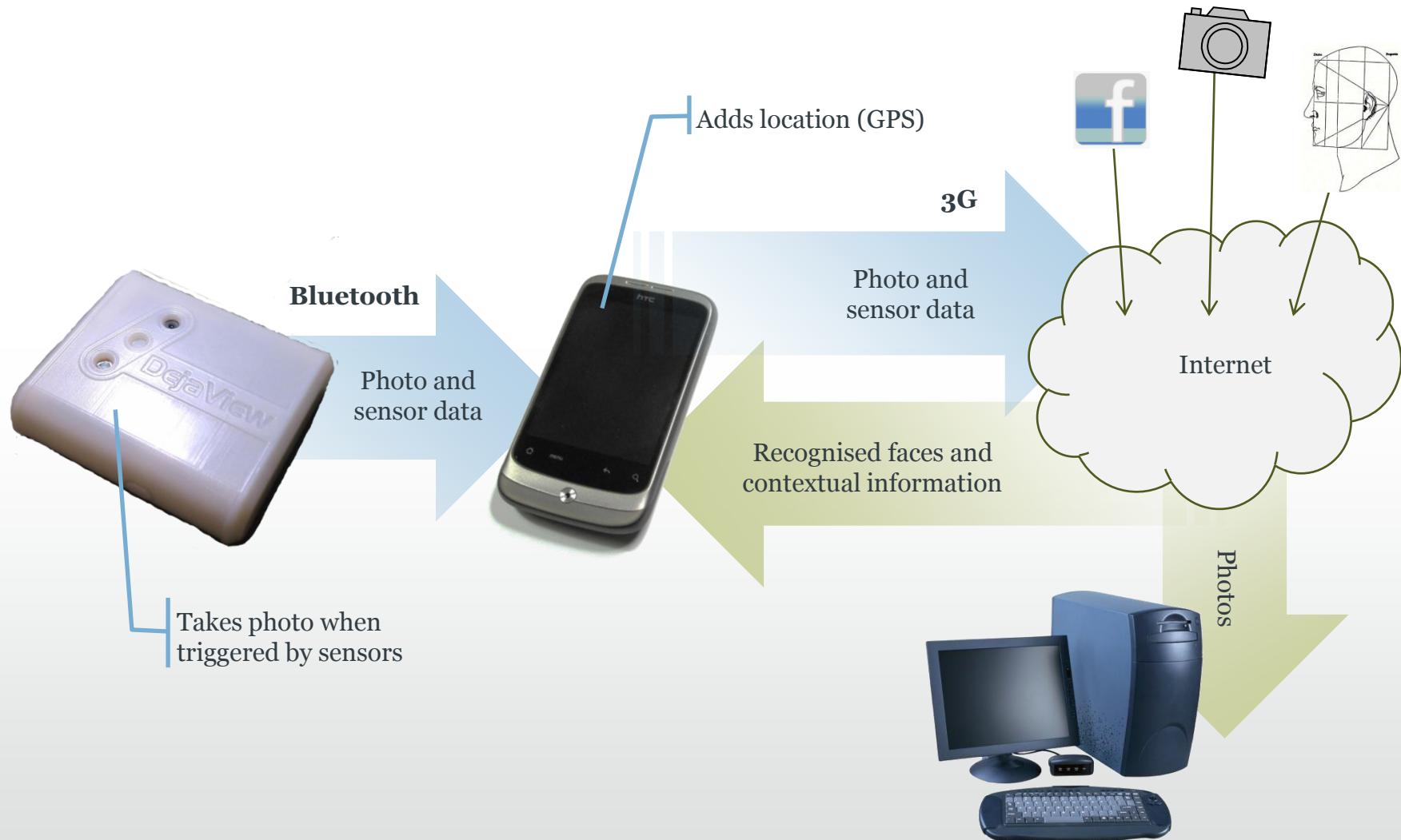
- SenseCam takes a lot of photos
 - ‘Take lots and filter later’
 - ‘more intelligence earlier’
- SenseCam only applicable to supporting **retrospective, episodic memory in reminiscence**



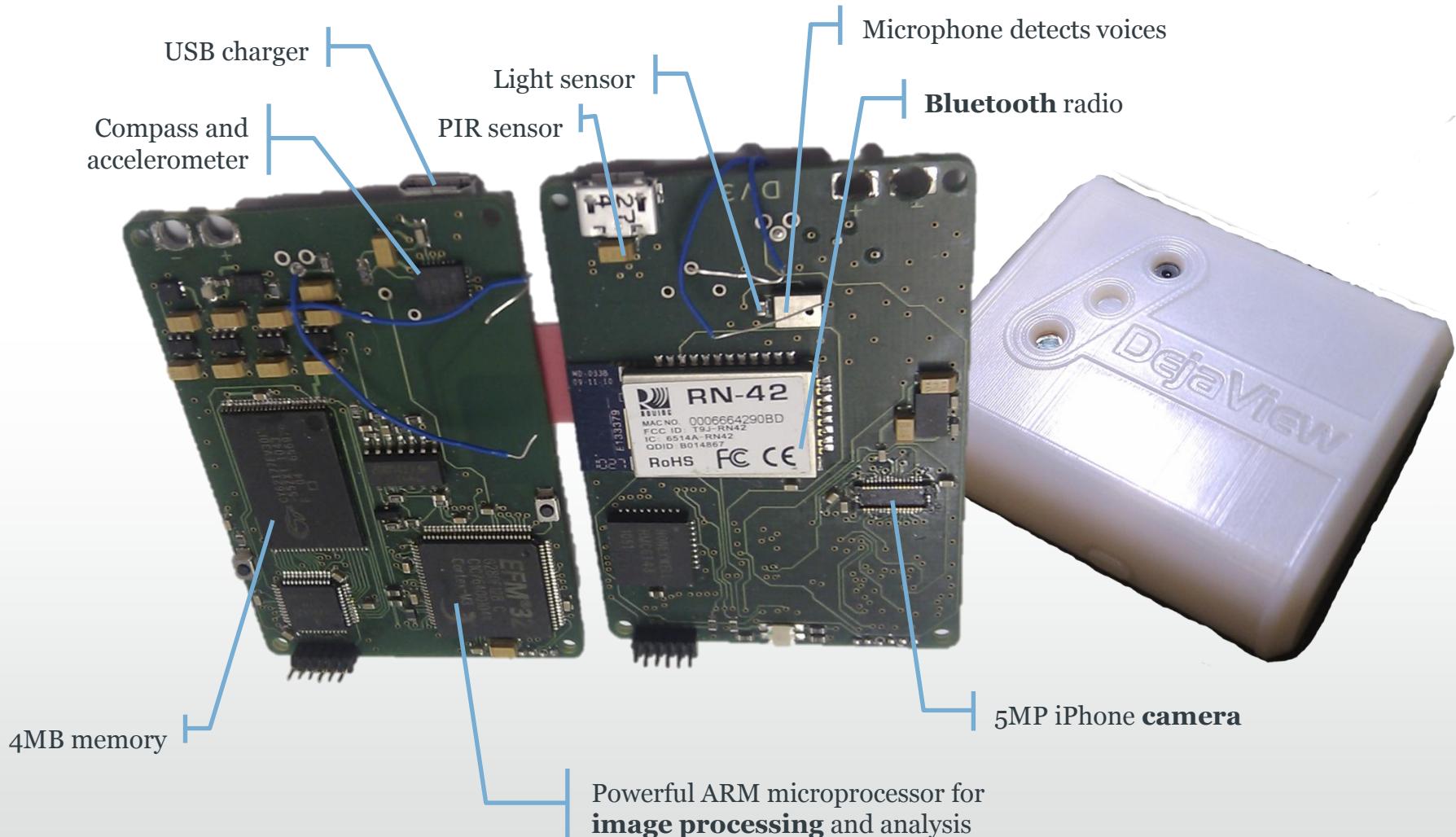
DejaView: a concept

- A system also capable of supporting memory both **in reminiscence** and **in the moment**
- A flexible system to support a range of memory tasks
 - **retrospective** (past)
 - **episodic** (events)
 - **semantic** (facts)
 - **prospective** (to-do)

DejaView system architecture

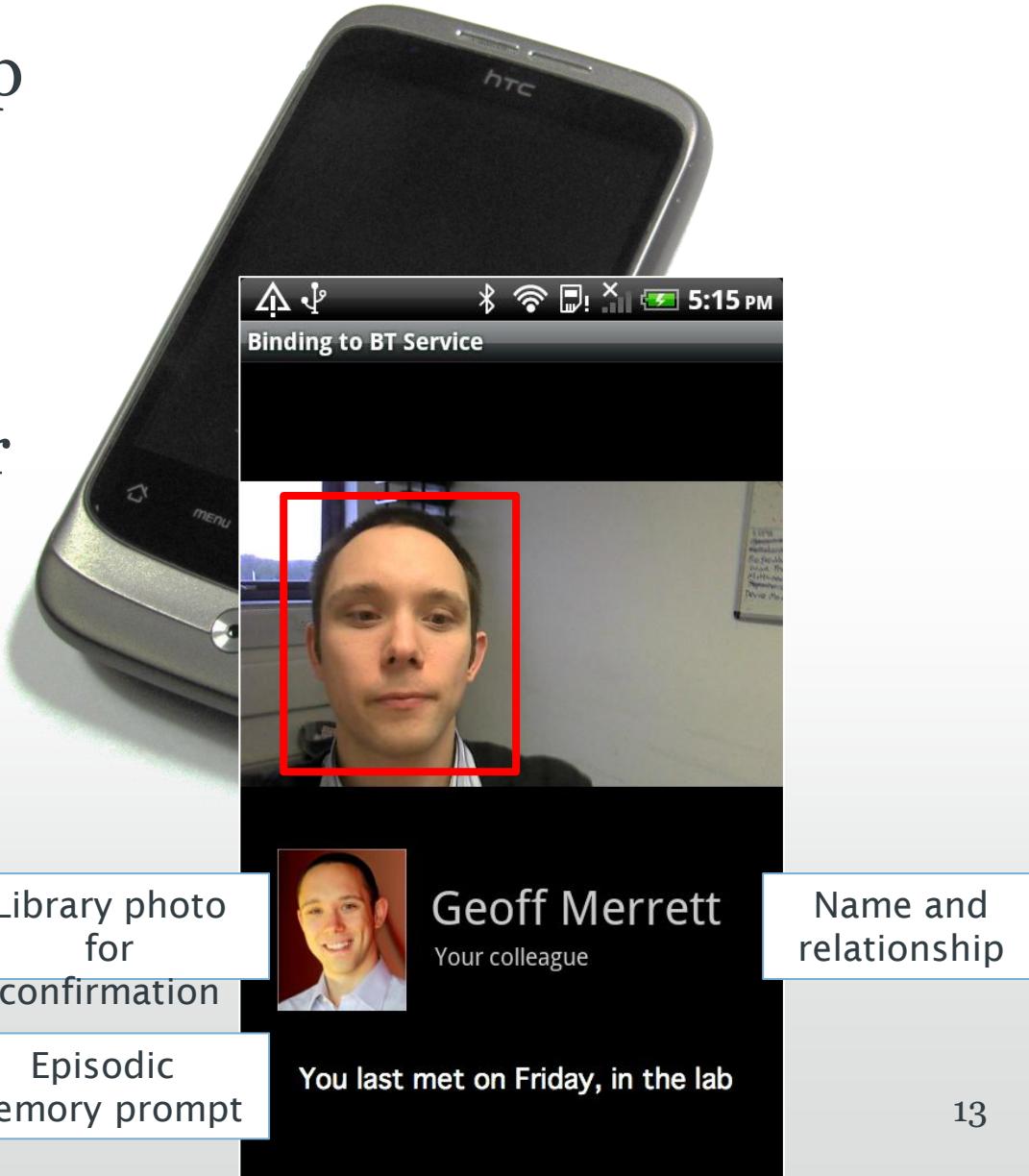


The DejaView device



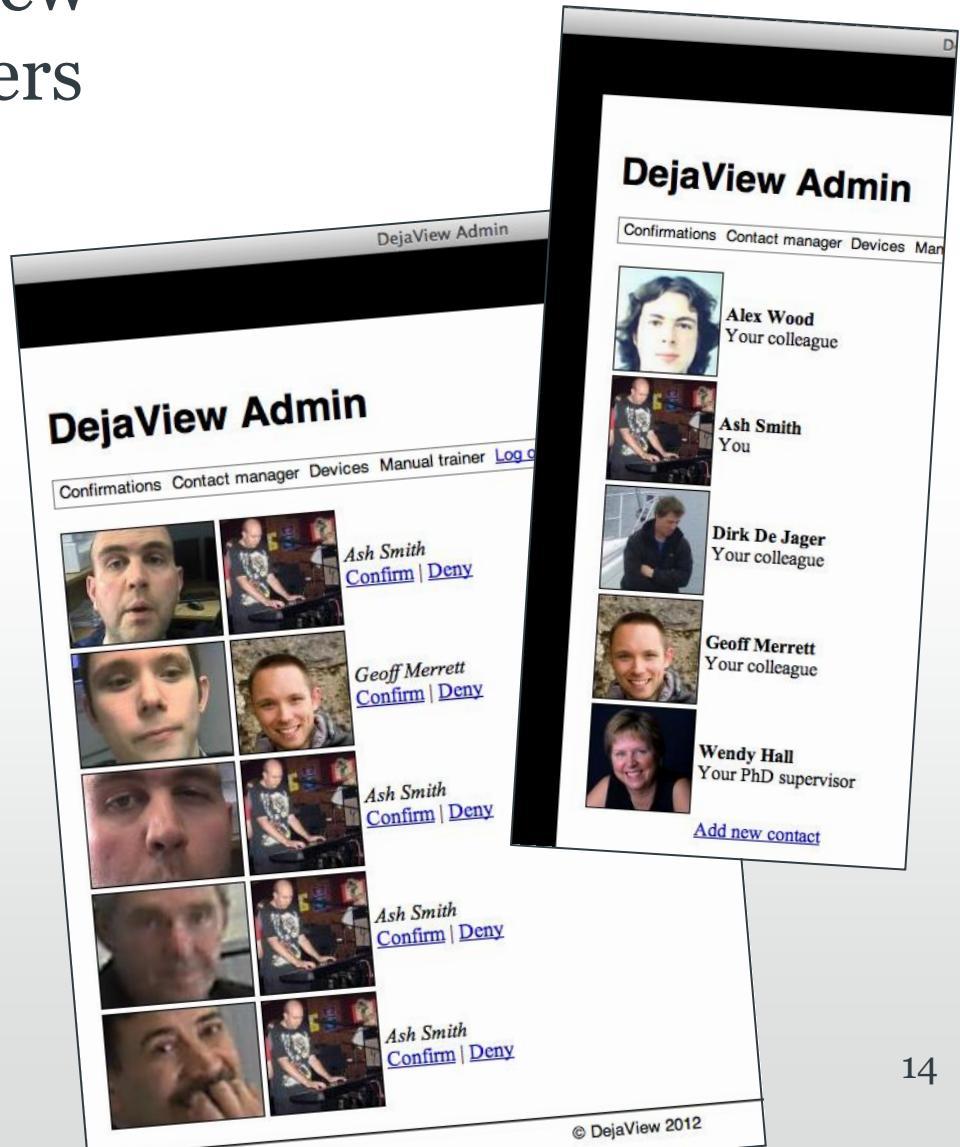
The Android phone

- In the moment help
- Gateway to Internet
- Adds more sensors and processing power
- Simple GUI for the less tech-savvy
- Already carried by some users

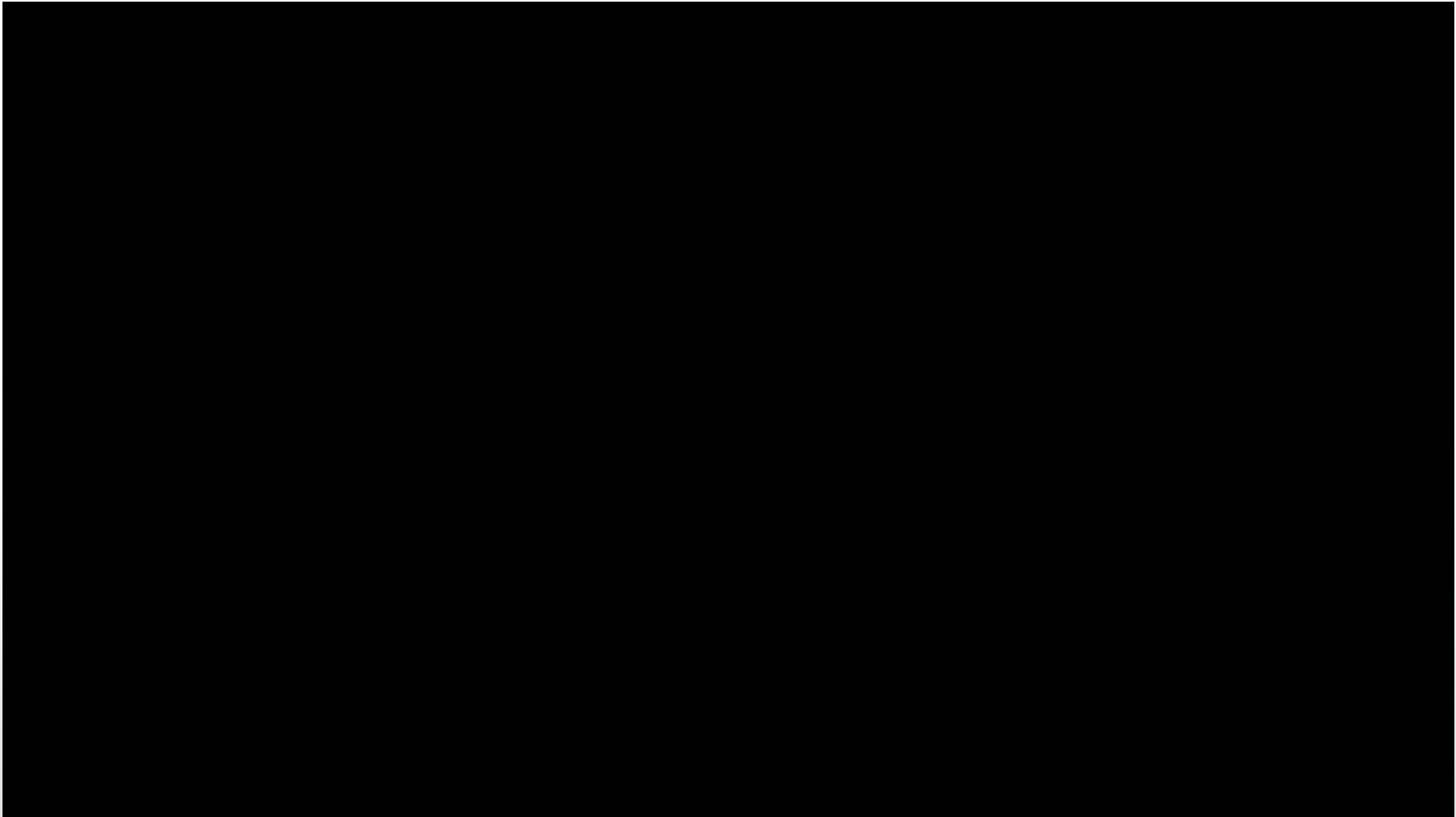


The Internet service

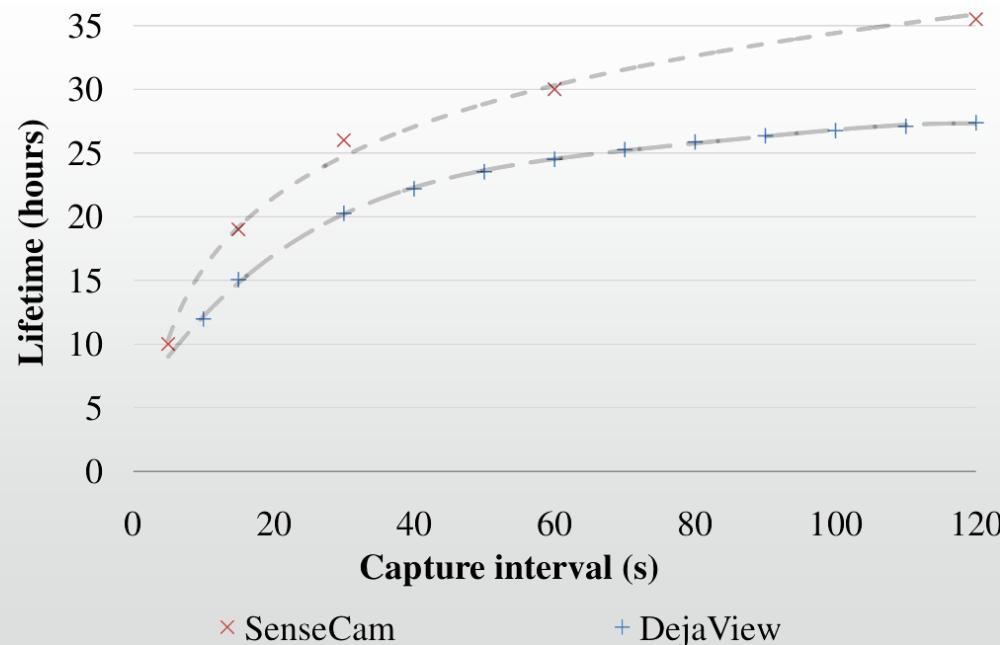
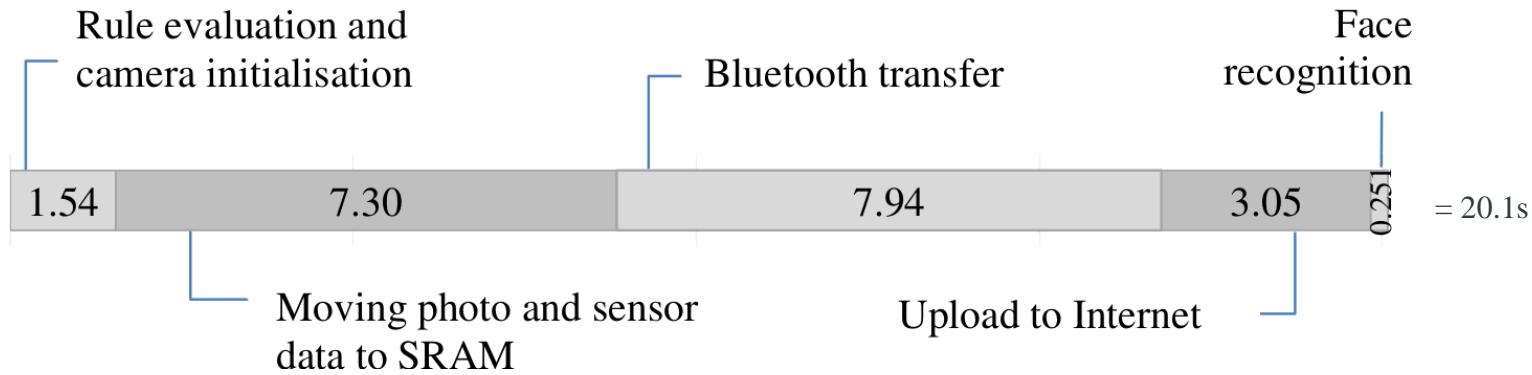
- In reminiscence review website for multiple users
- Further training for face recognition
- Interface for learning new people
- Runs face recognition, returns feedback to phone



Demonstration Video



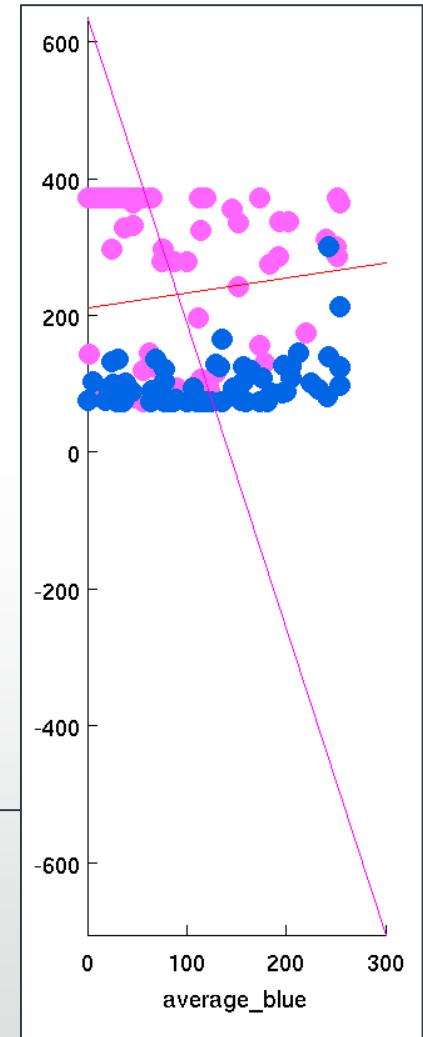
Latency and energy



Sensors and rules

- Understand context from combining sensor data
- Dynamic **rules** decide on
 - capturing images
 - enabling/sleeping the device
 - changing device settings
- Taking fewer, better photos
- Saving power

Contexts
Similar situations, based on similarity of sensor data (location, light, sound, people around, ...)



Discussion: uses

- Pilot trials with clinicians
- In-the-moment episodic support
- Monitoring of social interaction
- (Multi-person) lifelogging in real-time

Summary

- We have developed a **new memory aid** system which gives support both **in the moment** and **in reminiscence**
- Gives assistance to the user via their mobile phone
- Saves the captured photos to a website for review, shown to be of benefit in the existing literature

DejaView

Questions?