QuiltView:

A Crowd-Sourced Video Response System

Carnegie Mellon University

Zhuo Chen, Wenlu Hu, Kiryong Ha,
Jan Harkes, Benjamin Gilbert,
Jason Hong, Asim Smailagic,
Dan Siewiorek, Mahadev Satyanarayanan

1. Background

2. QuiltView Design
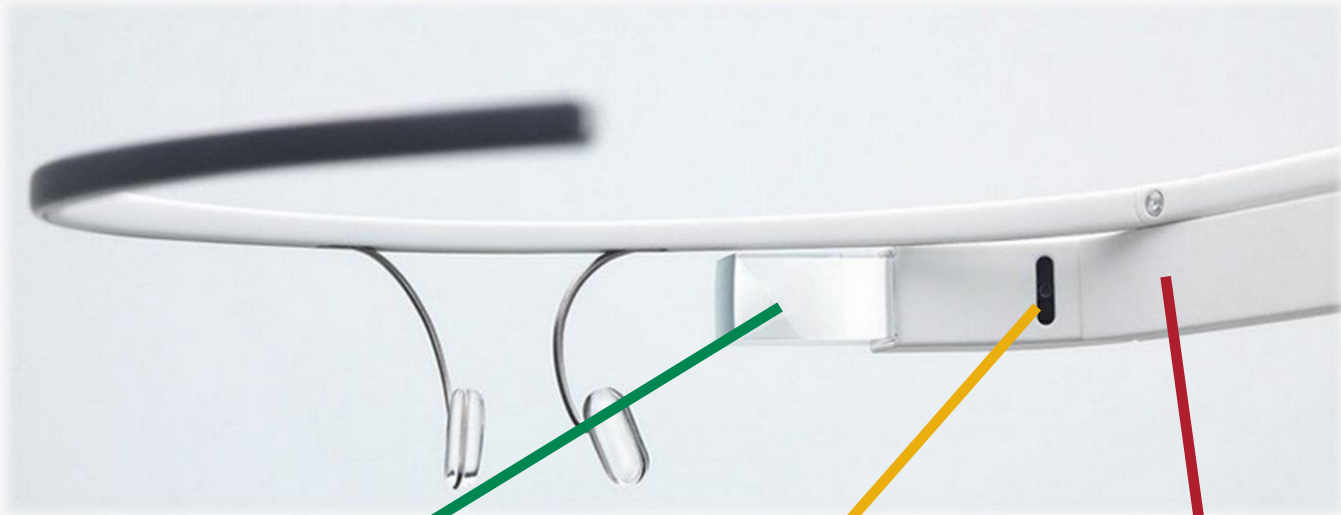
3. Architecture & Prototype

4. Discussions

1. **Background**

2. **QuiltView Design**

3. **Architecture & Prototype**

4. **Discussions**

Emergence of Smart Glass

Head-up display
Quick information access

Camera
Near effortless capture

Functionality
Roughly a smart phone

Micro-interactions

Not distract users from current context
  – Brief stimulus from the system
  – Quick and unobtrusive response

Two second rule

"Anything that takes you more than two seconds to accomplish, needs a good reason to be done. Anything that takes significantly less you will do without a second thought." [†]

[†] P. Lukowicz. Head-Mounted Displays: From Cyborgs to Google Glass. Wearable Technologies. May 2013.

What high value micro-interactions
can one have with a Glass user?

1. Background

2. QuiltView Design

3. Architecture & Prototype

4. Discussions

QuiltView Introduction

QuiltView is a near-real-time crowd-sourced system in which users reply to queries with videos through Glass.

– Queries are geo-casted to selected users

Is the beach crowded?

Why Video?

How is the night market now (at Taipei)?

Choice one
- Respond with text
- *" Um… the weather is good here, but it's pretty crowded and noisy, as usual. I see people selling pants, bags…"*

Choice two
- Respond with video

Simple Queries, Deep Answers

How is the night market now (at Taipei)?

" *Um… the weather is good here, but it's pretty crowded and noisy, as usual. I see people selling pants, bags…*"

- ## Videos "bring you to the scene"
  - *"If a picture is worth a thousand words, then a video is worth a million"* †

- ## Answer depends on personal taste
  - Requester can judge with his own knowledge and taste
  - Raw data is better than interpreted data
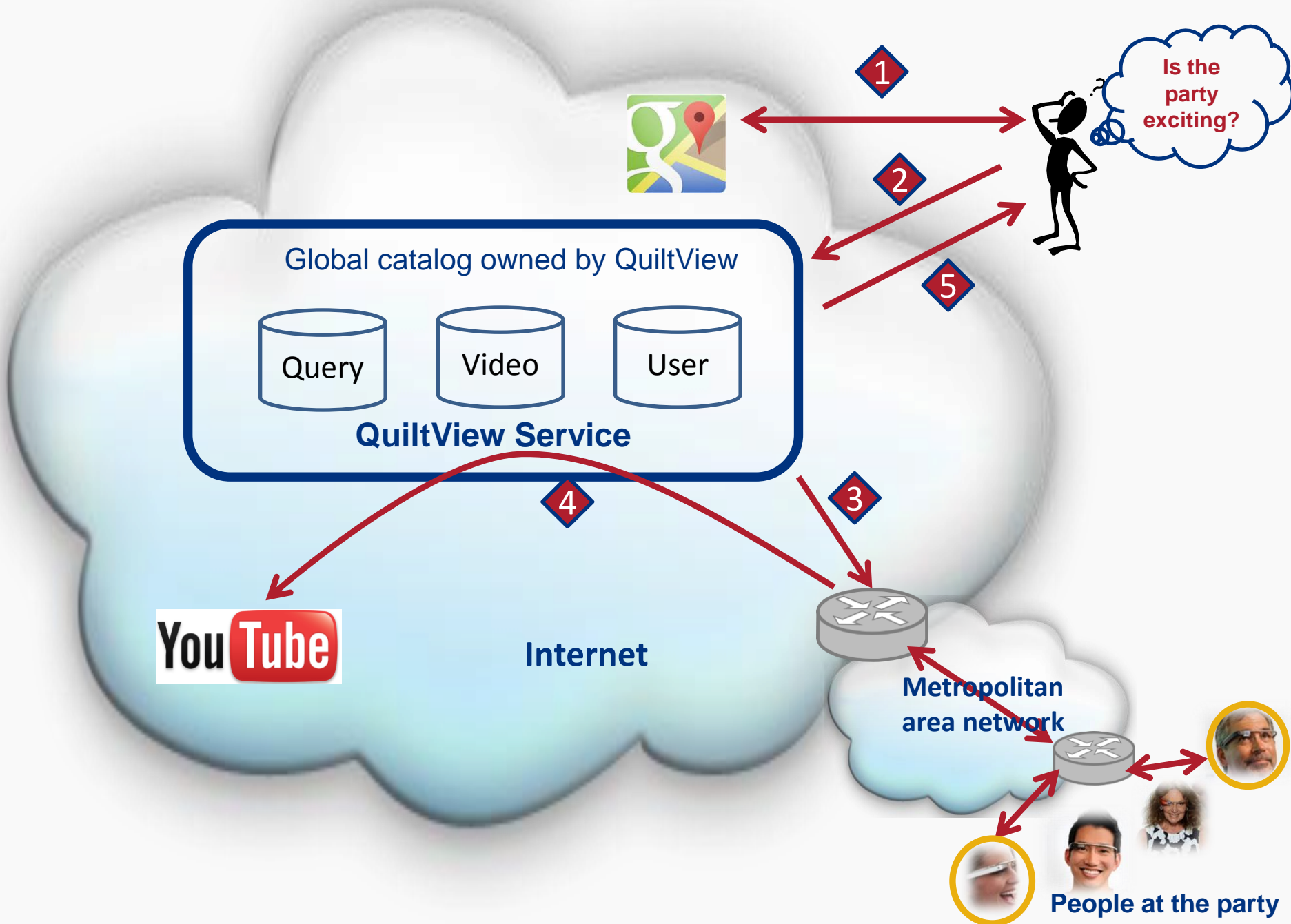
†Olson, T., Loquist, J., October 2010
http://youtube-global.blogspot.com/2010/10/if-picture-is-worth-thousand-words-then.html

1. **Background**

2. **QuiltView Design**

3. **Architecture & Prototype**

4. **Discussions**

Is the party exciting?

Global catalog owned by QuiltView

Query | Video | User

QuiltView Service

Internet

You Tube

Metropolitan area network

People at the party

1
2
5
4
3

12

Avoid Too Many Queries

Result caching
- "Similar" queries within a short time

Opt-in preferences
- Max queries/unit time
- Topics

Random sampling
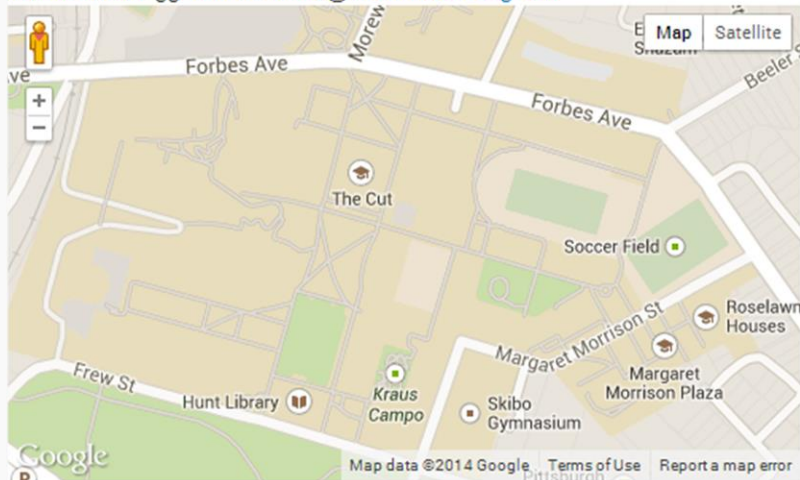- Choose a subset from eligible users

Credit system
- Similar to that in AMT
- Prevent spam users

Prototype – Server & Client

- Server: Amazon EC2, Django
- Client: GDK, background service

14
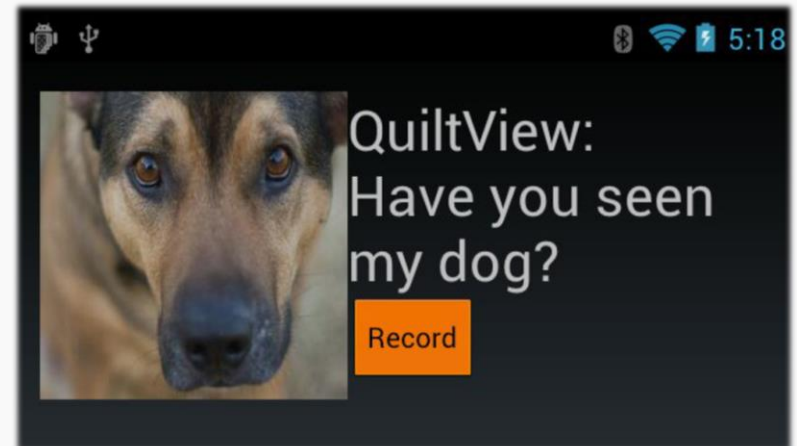
Prototype – Similarity Detection

- Semantic similarity – Gensim
  - Open-sourced python package
  - 9GB compressed corpus of the entire English Wikipedia

Queries	Matched Results
Is there a thunderstorm?	What is the weather? Is it raining? Is it cold outside?
How is the thesis defense?	Are the professor's questions hard?

1. Background

2. QuiltView Design

3. Architecture & Prototype

4. Discussions

Queries – What Can QuiltView Do?

Good Examples – local, near-real-time, subjective

Is the situation serious?

How's the free food?

How long is the queue?

How is the traffic?

Bad Examples –large-area, long-term facts, objective
– What is the population in the US?

Privacy

Share only with friends (e.g. Facebook)

Automatic denaturing (removing face, etc.)

Glass screen turned on while recording

Explicit confirmation by the Glass wearer

Missing in the Talk

- Restriction on queries
- SSL
- Mozilla Persona
- Inaccuracy in query similarity detection
- Virtual user for simulation
- Related work

Micro-interactions
have great potential

QuiltView offers a
valuable use

Interesting questions
to be explored

Thank you! Questions?
Contact: zhuoc@cs.cmu.edu