

Scalable Crowd-Sourcing of Video from Mobile Devices

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Motivation

- Head-mounted devices are upcoming



- Crowd-sourced videos are valuable

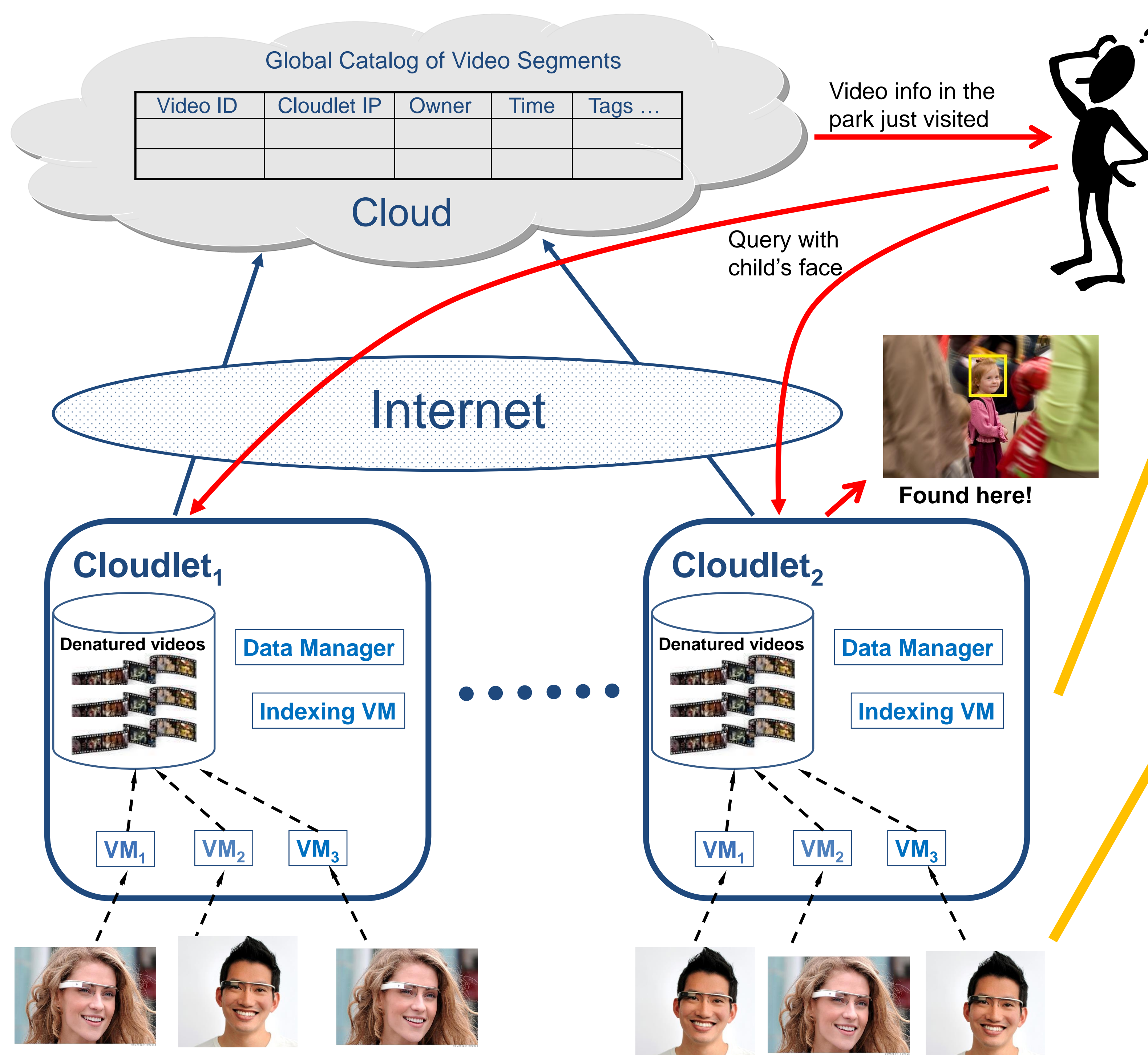


Key Challenges

- Scalability – bandwidth limitation
- User privacy
- How to search efficiently?

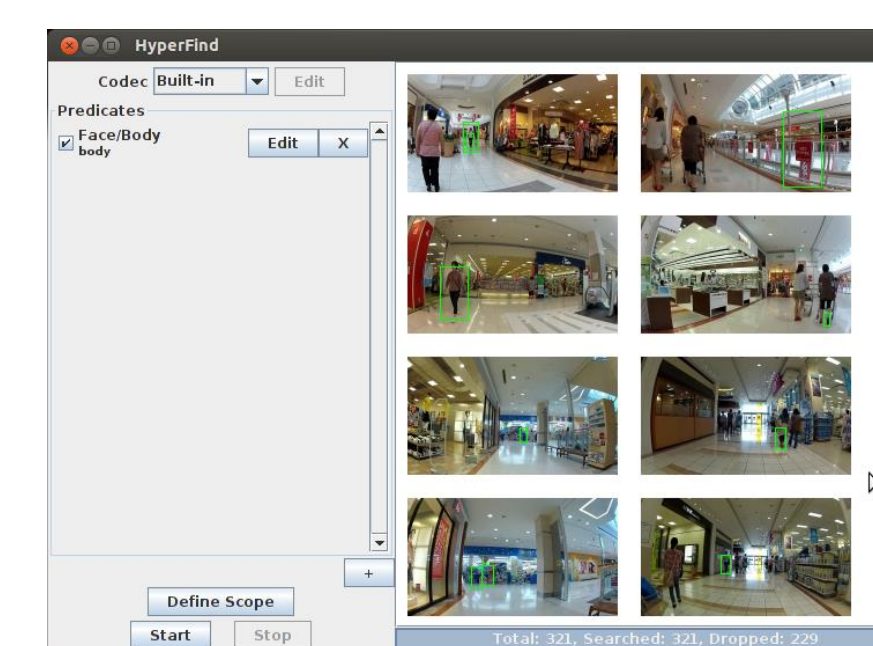
System Architecture

- Videos are stored at cloudlets, metadata goes to the cloud



Where's my child?

Search



- By index or content (face, texture...)

Denaturing & Indexing

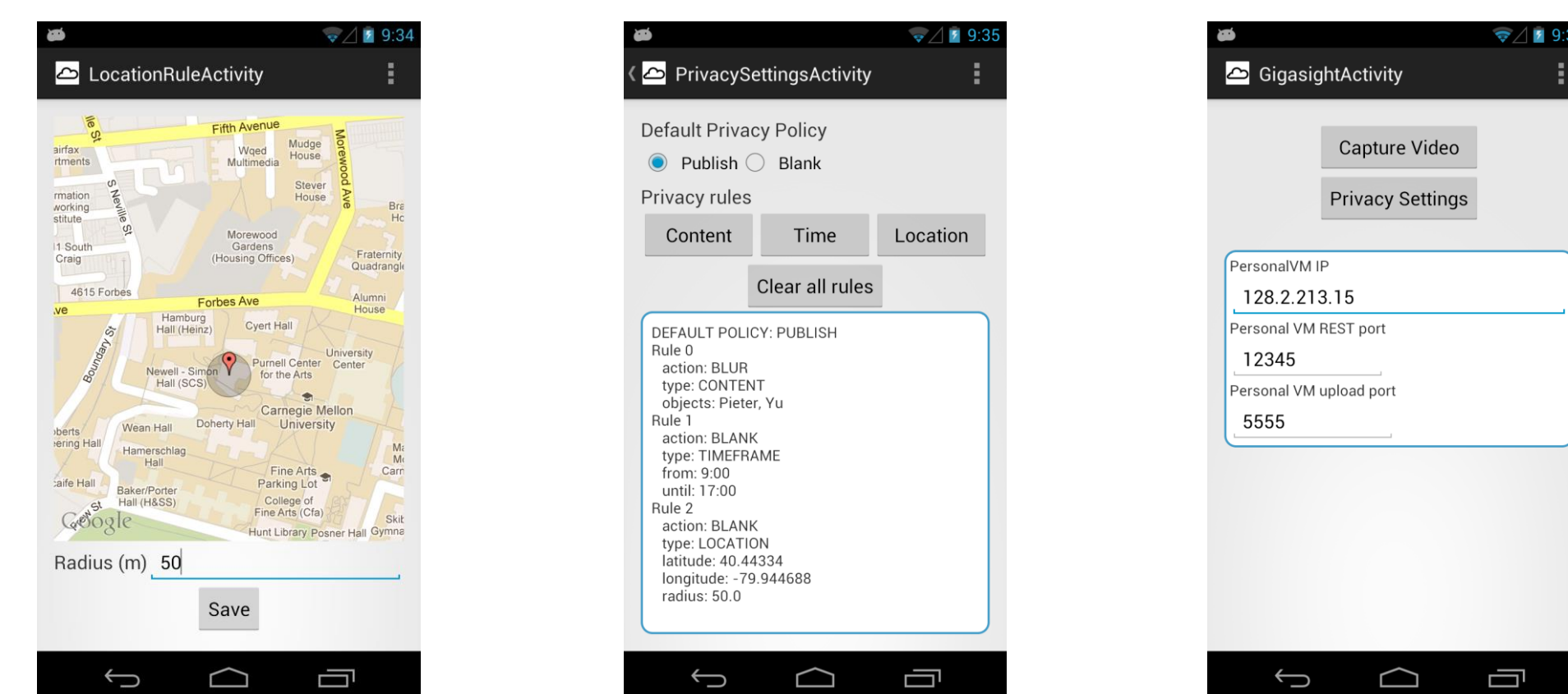
- Remove sensitive scenes & add tags



Dog, water

Uploading to cloudlets

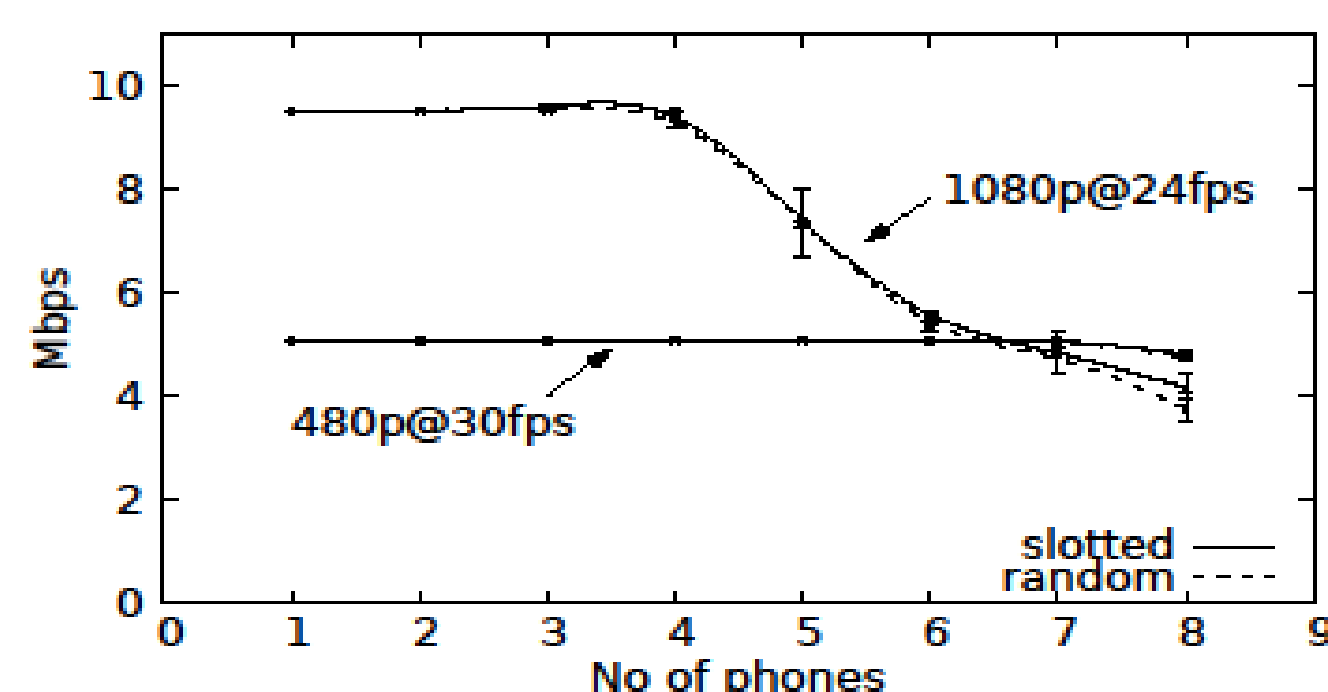
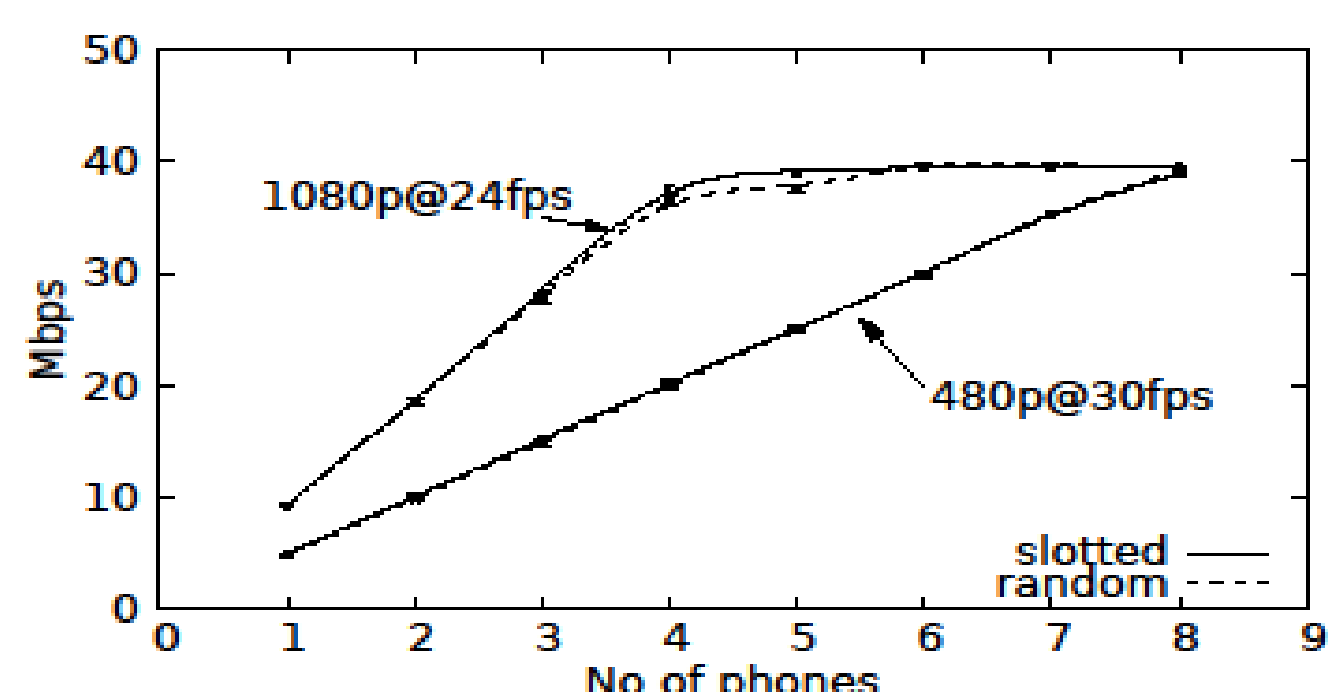
- Can specify privacy settings at client side



Experimental Results

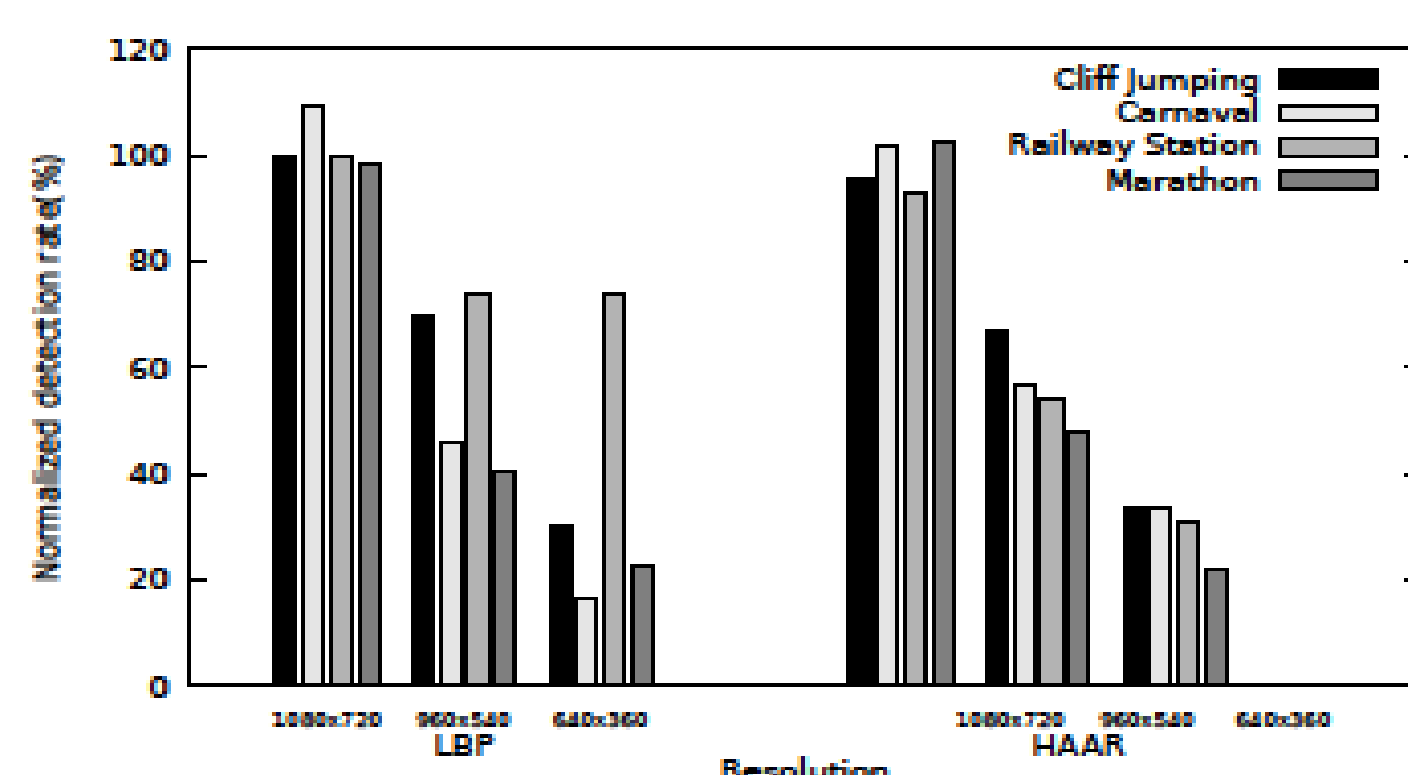
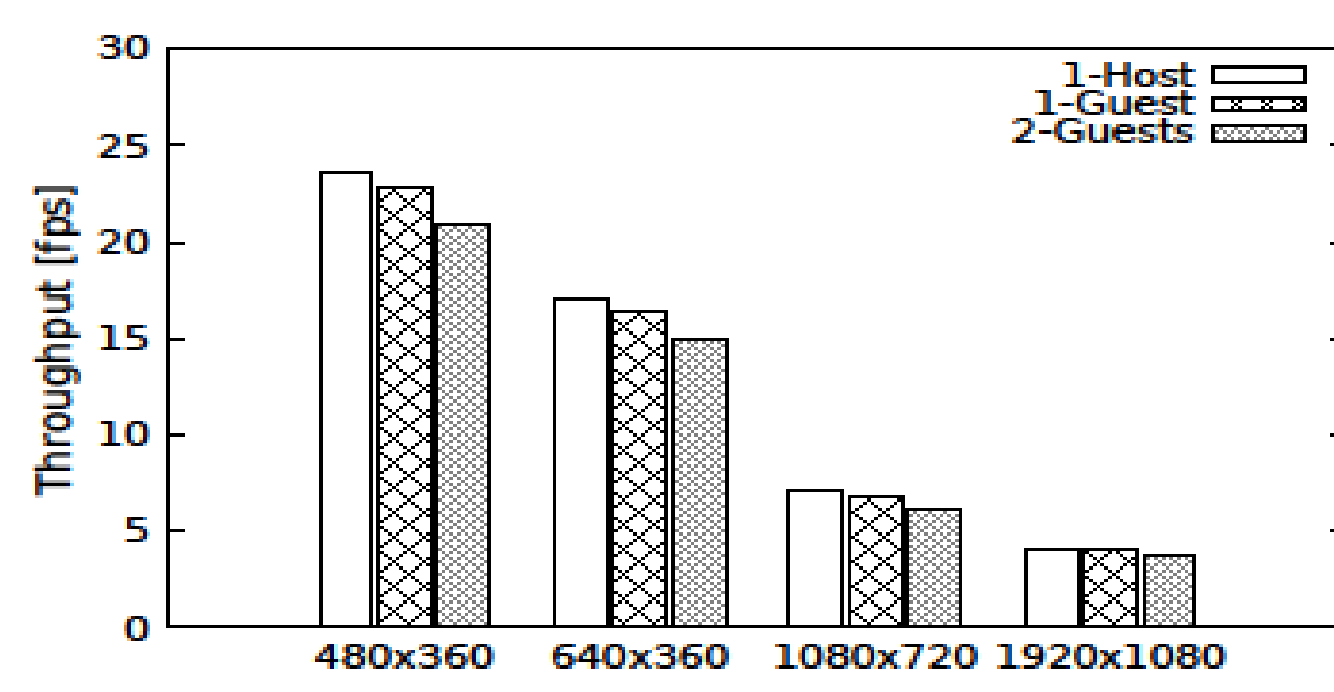
Uploading to cloudlets

- One AP can support 4-5 users for highest resolution (1080p)



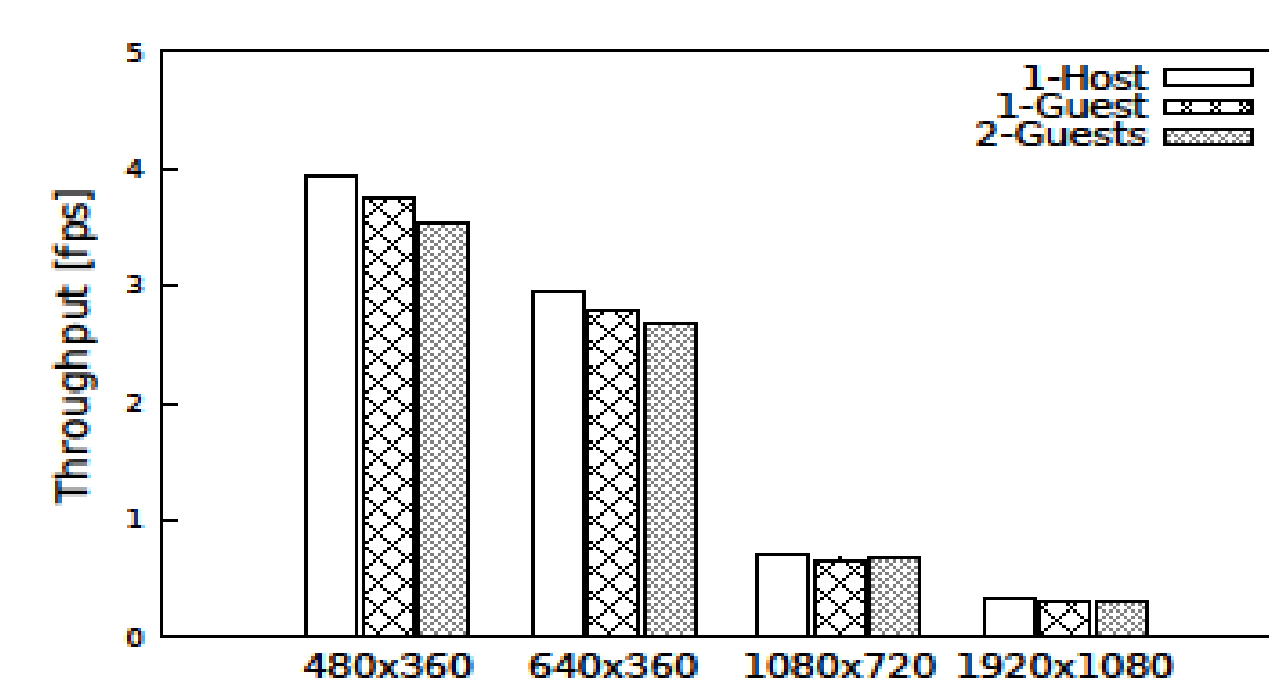
Denaturing

- Throughput and accuracy varies with resolution (1fps – 7fps)



Indexing

- Can index one frame per several seconds



Energy consumption

- Energy consumption increases as WiFi is saturated

