How and when to use Natural Feature Recognition in AR
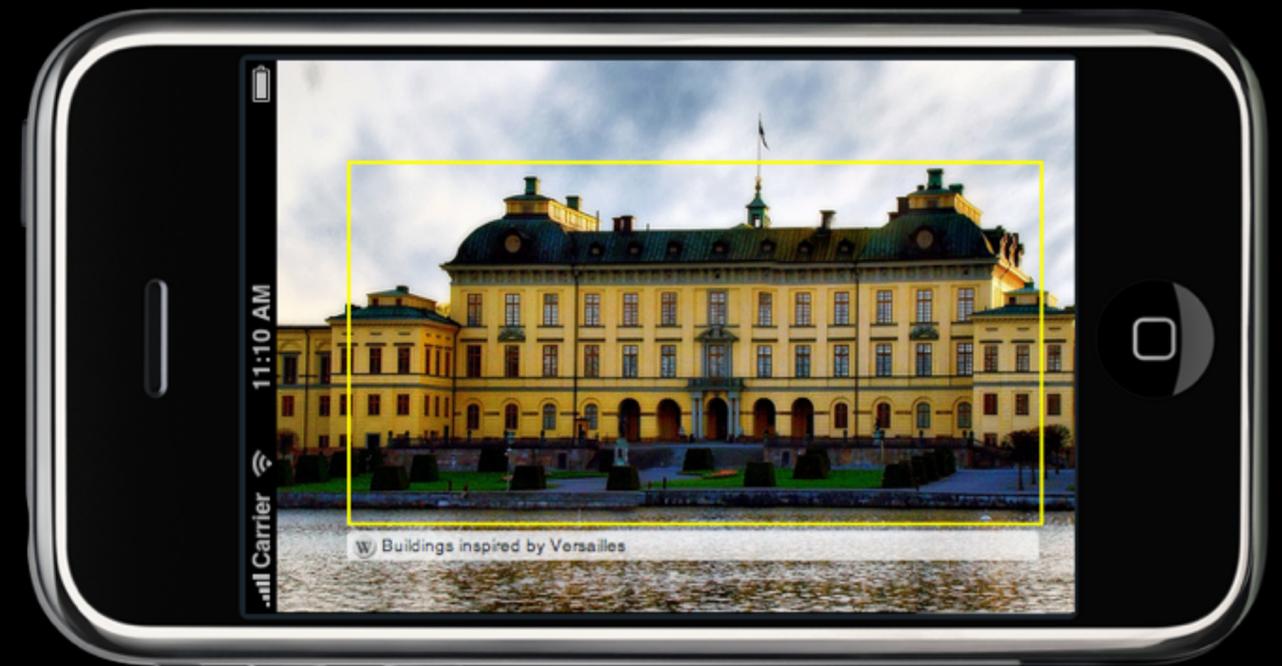
Till Quack
kooaba (CTO) & ETH

Why image features?

I. Scene Structure

II. Scene Contents

Scene Structure

Understand Position of Camera
(Phone) in world

SLAM
PTAM

http://www.youtube.com/watch?v=pBI5HwitBX4

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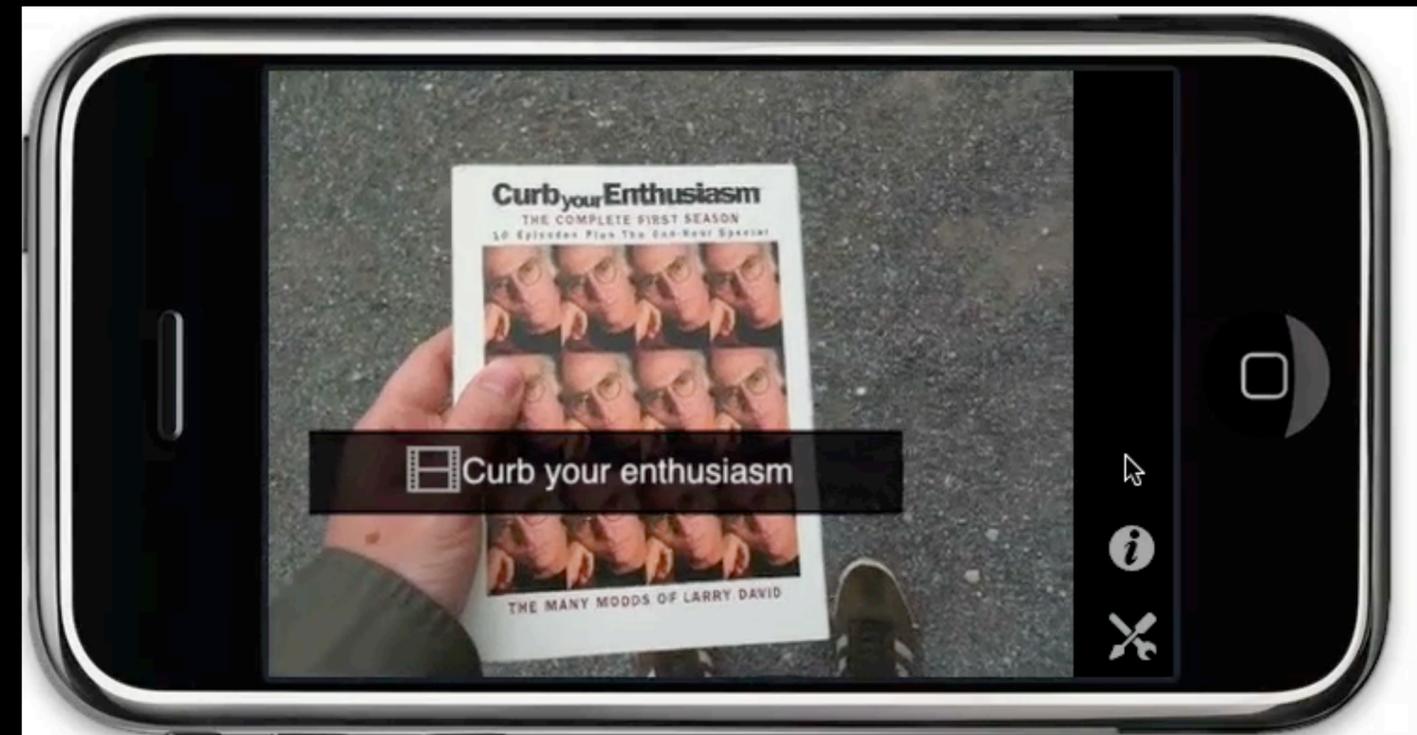http://www.youtube.com/watch?v=pBI5HwitBX4

Scene Contents

Understand what's on the screen

Object Recognition
Object class recognition
Scene classification

Millions of objects!!

vs. Markers

★ Pro's of natural features

  ★ Works everywhere

  ★ The "real thing" for consumer apps

★ Con's

  ★ More complex, not as robust yet

vs. GPS / Compass

★ Pro's of natural features

   ★ Precise labeling possible

   ★ objects which are really in sight
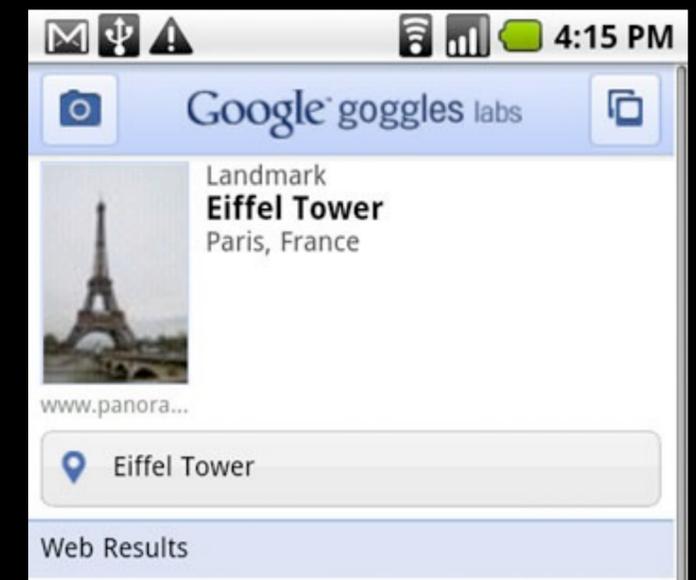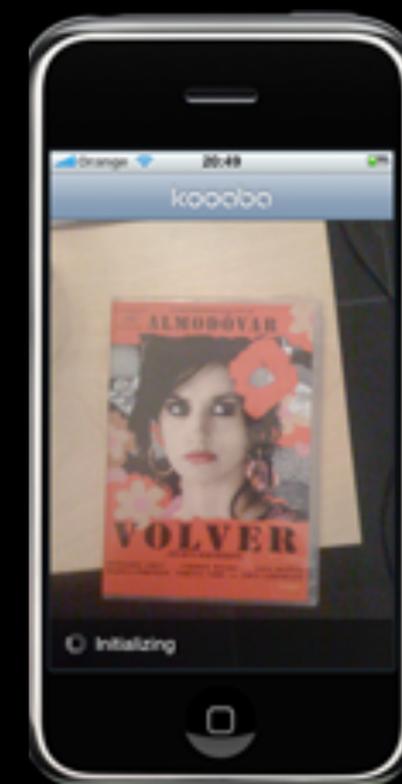
   ★ stationary and non-stationary objects

★ Con's

   ★ Not as robust yet

   ★ Complex technology

   ★ Extensive (image) databases required

Server Side vs. Client Side

- Client side:

  - More interatcive

  - No roaming

- Server side

  - large object databases possible

  - always up-to date

You cannot do serious AR
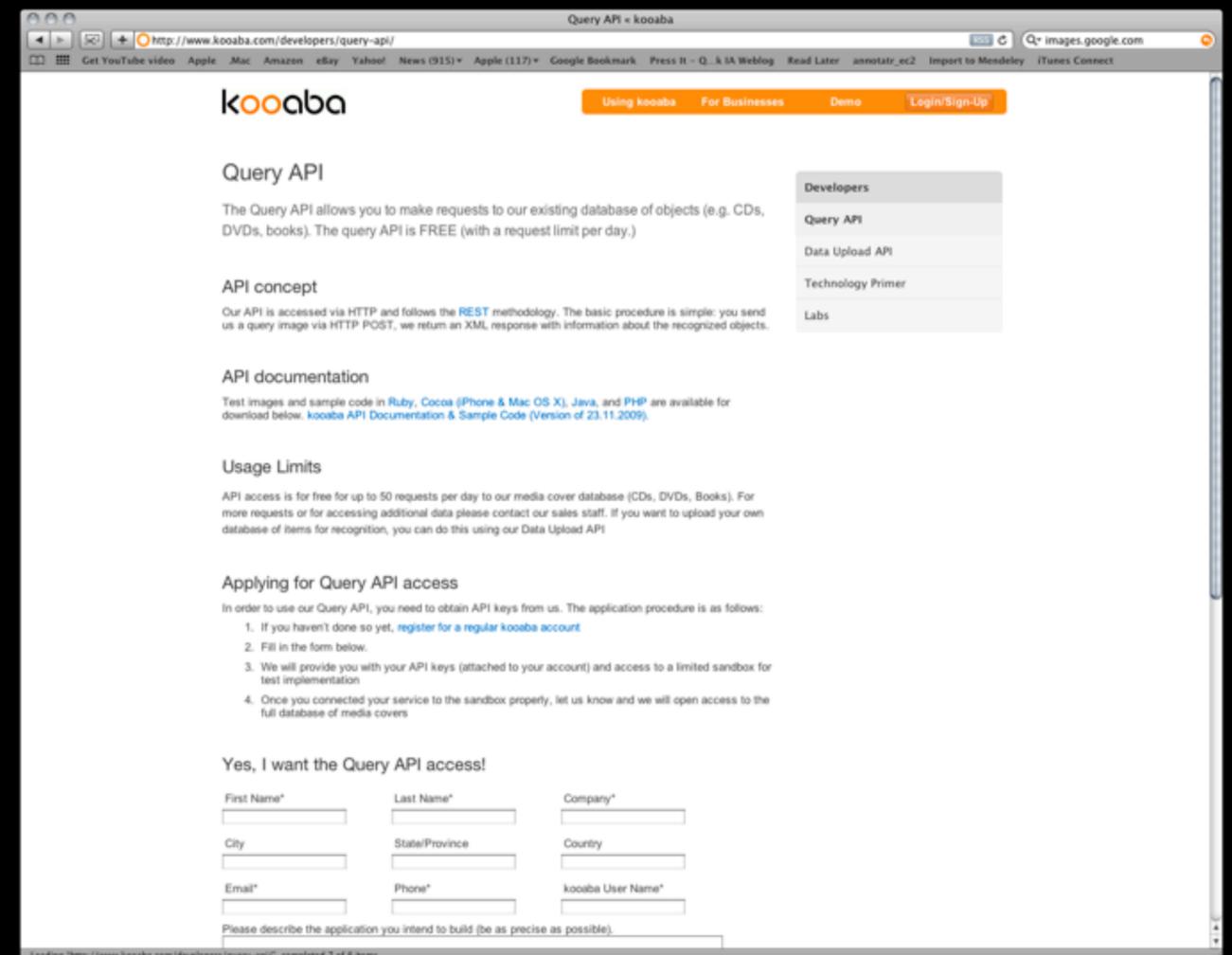without using
natural image features

Announcement - kooaba API

In order to foster innovation with feature based recognition / tracking combinations

**FREE API access
to kooaba Media Cover
Recognition Service**
- identify ˜ 10 Million items
- initially 50 requests per day
- available as of **today**

http://www.kooaba.com/developers/

API usage

- REST API

- HTTP POST send image in, get XML response out

- that's it

- <show document here>

- data group based permissions (cds, dvds, ...)

- Combination with data upload API (commercial) possible

API stats

- Database: access about 8-10 million media covers (free api)

- Response time: 1-5s (a challenge...)

- Running on the amazon ec2 cloud (should scale ;))

Topics

- Most beneficial use cases?

- Professional vs consumer apps?

- What's missing in technology?

- versus / combined with GPS

- versus / combined with Markers

- Privacy?

- What is the interface for AR actually (visual)?

- client-side / server-side

- Tech questions? Whats possible? What not?

- Only a feature or more?