



# Multimedia Queries and Indexing



Prof Stefan Rüger  
Multimedia and Information Systems  
Knowledge Media Institute  
The Open University  
<http://kmi.open.ac.uk/mmis>

**MMIS**  
Multimedia and Information Systems



# KMi

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Compendium



FM Technology



Magpie

# About



The Knowledge Media Institute (KMi) was set up in 1995 in recognition of the need for the Open University to be at the forefront of research and development in a convergence of areas that impacted on the OU's very nature: Cognitive and Learning Sciences, Artificial Intelligence and Semantic Technologies, and Multimedia. We chose to call this convergence Knowledge Media.

Knowledge Media is about the processes of generating, understanding and sharing knowledge using several different media, as well as understanding how the use of different media shape these processes.

KMi operates with reference to a number of basic tenets, which define the context in which we formulate and pursue our research objectives:

## Strategic Threads

Our research is aligned with a number of broad strategic threads, currently [Future Internet](#), [Knowledge Management](#), [Multimedia & Information Systems](#), [Narrative Hypermedia](#), [New Media Systems](#), [Semantic Web & Knowledge Services](#) and [Social Software](#).

Future Internet

Knowledge Management

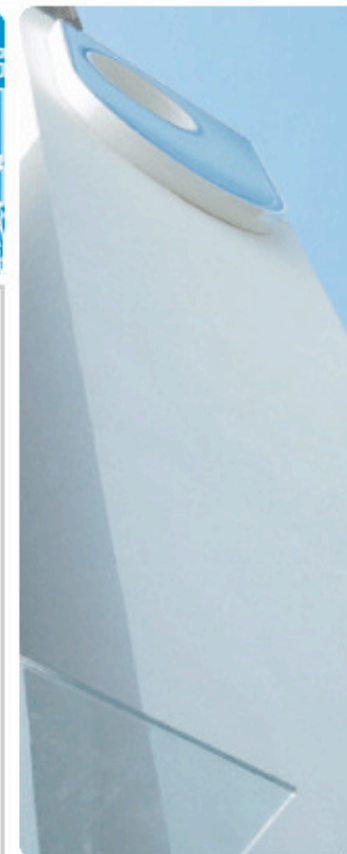
Multimedia & Information Systems

Narrative Hypermedia

New Media Systems

Semantic Web & Knowledge Services

Social Software







## Projects

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## Research Themes

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Semantic Web & Knowledge  
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# Projects

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

## Projects | Hot

SPOTLIGHTED HOT PROJECTS



### NoTube

Future Internet Semantic Web and Knowledge Services

*Networks and Ontologies for the Transformation and  
Unification of Broadcasting and the intErnet*



<http://www.mmkm.org>

### The UK Multimedia Knowledge Managment Network

Multimedia and Information Systems

*Enhance communication between the experts in both  
academia and industry*

Future Internet

Knowledge  
Management

Multimedia &  
Information Systems

Narrative  
Hypermedia

New Media Systems

Semantic Web &  
Knowledge Services

Social Software





Since 1995: 117 projects & 67 technologies

Current year

17 live projects

typically £2.5m ext, £1m internal

- 10 EU
- 3 UK
- 1 US
- 3 internal (iTunes U, SocialLearn)



1. What are multimedia queries?
2. Fingerprinting
3. Image search and indexing
4. Evaluation
5. Browsing, search and geography





## 1. What are multimedia queries?

- What is multimedia?
- Query by image
- Current best practice for image search
- Snaptell/Google goggles
- Shazam
- Discussion: Challenges and difficulties

## 2. Fingerprinting

## 3. Image search and indexing

## 4. Evaluation

## 5. Browsing, search and geography



# What is Multimedia?

Within this lecture:

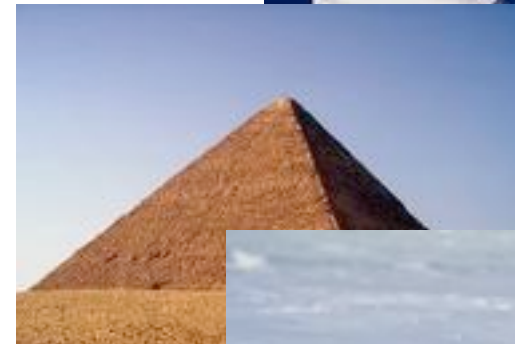
One or more media

Possibly interlinked

Digital

For communication

(not only entertainment)





## Multimedia queries



The Twelve Collegia building on Vasilievsky Island in Saint Petersburg is the university's main building and the seat of the rector and administration (the building was constructed on the orders of Peter the Great)





“twelve collegia building”

Google Images



Bing Images



Flickr



Yahoo Images



ImageToss



Yandex



Яндекс





Best current practice is a text search:  
Find text in filename, anchor text, caption, ...

Text search works by creating a large index:

368

## GENERAL INDEX

Henderson **85**

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# Google Twelve Collegia building

[Go to Google.com](#)
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[Maps](#)
[News](#)
[Shopping](#)
[Gmail](#)
[more](#)

[Sign In](#)

twelve collegia building

About 138,000 results (0.09 seconds)

Everything
 Images
 Videos
 News
 Shopping
 [More](#)

**Sort by relevance**

Sort by subject

**Any size**

Large

Medium

Icon

Larger than...

Exactly...

**Any color**

Full color

Black and white





# Flickr Twelve Collegia building

● twelve collegia building - Flickr...

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Photos | Groups | People

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⌵

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Full Text | Tags Only

Advanced Search

Sort: **Relevant** | Recent | Interesting

View: **Small** | Medium | Detail




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**Mythical Creatures**  
340 members | 4,112 photos



**Statues & Monuments**  
637 members | 11,866 photos

more...



# Bing Twelve Collegia building

twelve collegia building - Bing ...

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[Images](#)
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twelve collegia building

[Web](#)
[Images](#)
[More](#)

Twelve Collegia Building

Collegia Pietatis

Roman Collegia

Collegial

College Humor

SIZE

LAYOUT

COLOR

STYLE

PEOPLE

SEARCH HISTORY

Search more to see your history

See all

Clear all · Turn off

Results are included for twelve college building.

Show just the results for twelve collegia building.

Select View: [Large](#) [Medium](#) [Small](#)

SafeSearch: [Moderate](#)

5,280 results



# Yahoo Twelve Collegia building

Yahoo! Image Search Results f... +

New User? Sign Up | Sign In | Help

Make Yahoo! your homepage | Mail

Web Images Video Local Shopping News More ▾

**YAHOO!**  
UK & IRELAND


twelve collegia building

Search Options ▾


SafeSearch: ON

Show only: ☐ Wallpaper ☐ Black & White [More Filters](#)


1-7 of 7 for twelve collegia building




1722 r.jpg  
297 x 400 | 49k  
[300.spb.ru](#)




Varsity1.jpg  
480 x 277 | 16k  
[niif.spbu.ru](#)




known as **twelve** colle...  
[Darius photo flickr.com](#)




angel incendiary  
[Aviatrix\(here an... flickr.com](#)



SP06.jpg  
1000 x 372 | 184k  
[uri.edu](#)



300px Twelvecollegia.jpg  
300 x 220 | 20k  
[citizendia.org](#)



1722 r s.jpg  
74 x 100 | 4k  
[300.spb.ru](#)





# Imagetoss Twelve Collegia building

Twelve Collegia Building Imag...

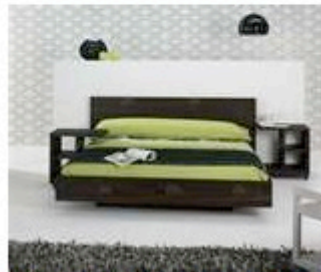


Find Images..

Browse...



eye catching interior design modern home i



rest room modern home interior design hou

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# Yandex Twelve Collegia building

Yandex.Images: twelve collegi...
Web Images Video
Help

has found  
15 images

twelve collegia building
Search
☐ search within results
[advanced search](#)

All Wallpaper Large Medium Small Portrait
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Historic **building** of the **Twelve Collegia** now belongs to...  
300×225 ... 1024×768  
[www.search.com](http://www.search.com)

**Building of the Twelve Collegia.**  
300×220 ... 600×440  
[www.search.com](http://www.search.com)

Hallway in the **Twelve Collegia building**, St. Petersburg...  
300×225 ... 3264×2448  
[www.medlibrary.org](http://www.medlibrary.org)

The **Twelve Collegia building.**  
300×183 ... 3041×1856  
[www.nethelper.com](http://www.nethelper.com)

About us - **collegium musicum**.  
328×227 ... 450×321

**Build** christmas stocking.  
455×296

**Collegium Alchemicum.**  
101×84 ... 660×539

Why are there **twelve** stars on the European flag.



# Яндекс: Здания Двенадцати коллегий

Яндекс.Картинки: здания Дв...

Поиск

Почта

Карты

Маркет

Новости

Словари

Блоги

Видео

Картинки

ещё

Яндекс

картинки

здания Двенадцати коллегий

Найти

☐ в найденном

расширенный поиск

Настройка

Мои находки

Войти

Помощь

Любые

Обои

Большие

Средние

Маленькие

Портреты

Найдено картинок: 1 633

Включен умеренный фильтр

Яндекс.Видео

Мантия Менделеева в подарок Петербургскому университету от Британии...

Еще по запросу:

«здания Двенадцати...» 31

Д.А. Трезини. Двенадцати коллегий здание в Санкт-Петербурге.

900×590 ... 904×594

artclassic.edu.ru

Фотогалерея Здание Двенадцати коллегий.

95×65 ... 500×333

sightseen.turistua.com

похожие

Здание Двенадцати коллегий и. с рис. М. И. двор.

175×105 ... 549×330

www.citywalls.ru

похожие





# Near-duplicate detection: Cool access mode!



MORGAN & CLAYPOOL PUBLISHERS

## Multimedia Information Retrieval

Stefan Rüger

*SYNTHESIS LECTURES ON INFORMATION  
CONCEPTS, RETRIEVAL, AND SERVICES*

Gary Marchionini, *Series Editor*

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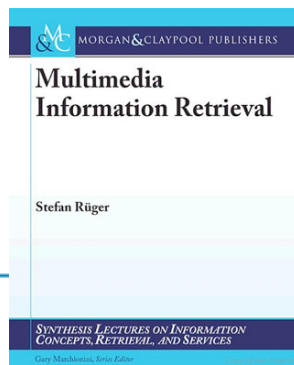


The Open  
University



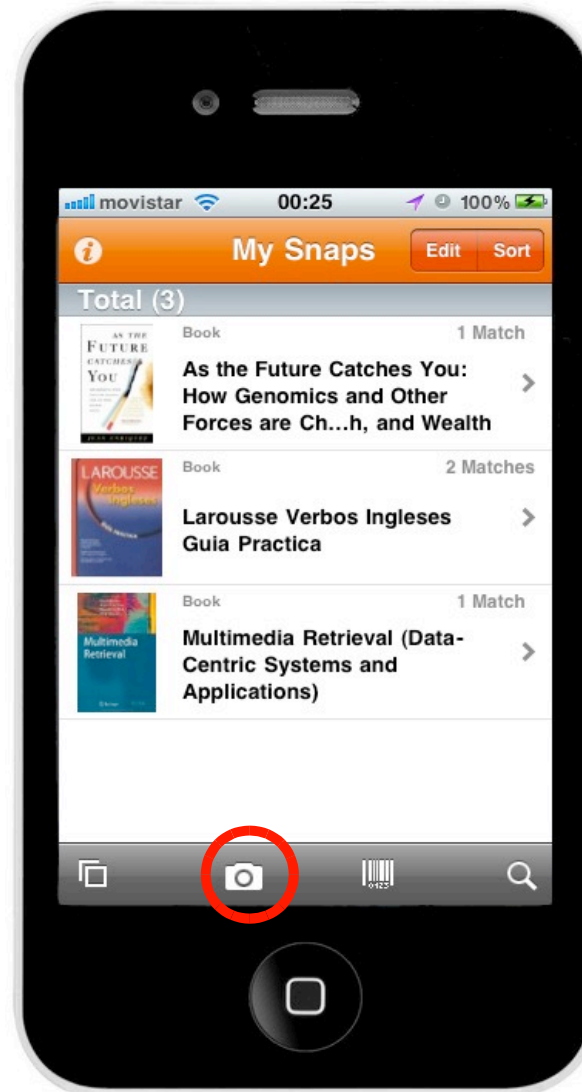


# Snaptell: Book, CD and DVD covers



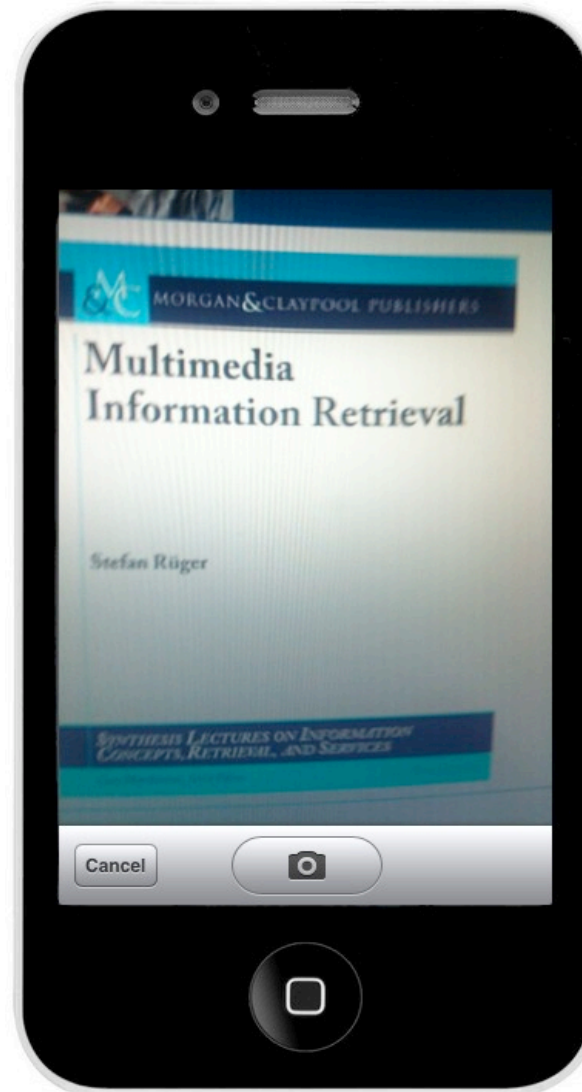


# Snaptell: Book, CD and DVD covers



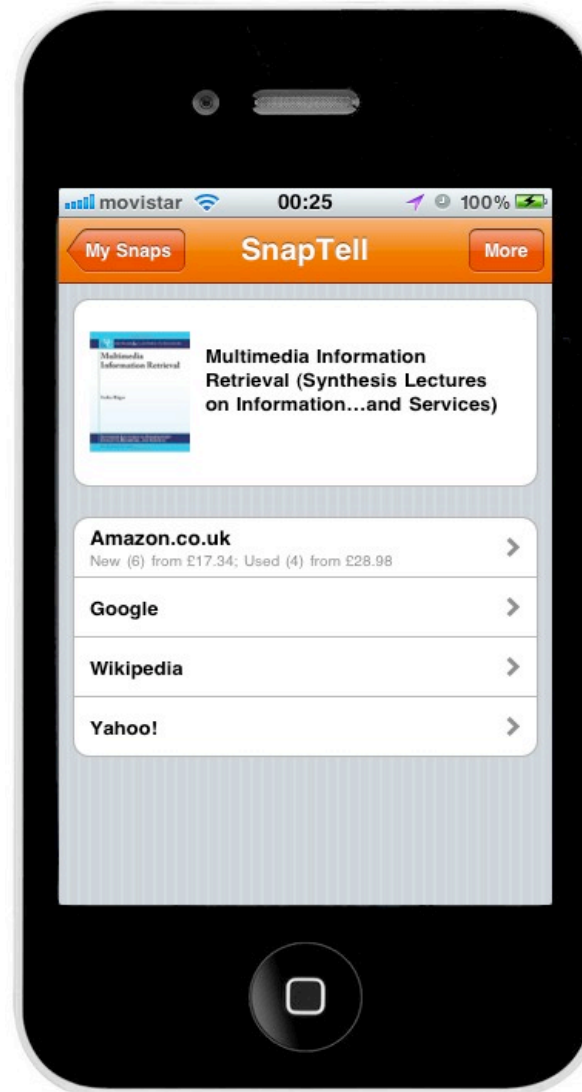


# Snaptell: Book, CD and DVD covers





# SnapTell: Book, CD and DVD covers





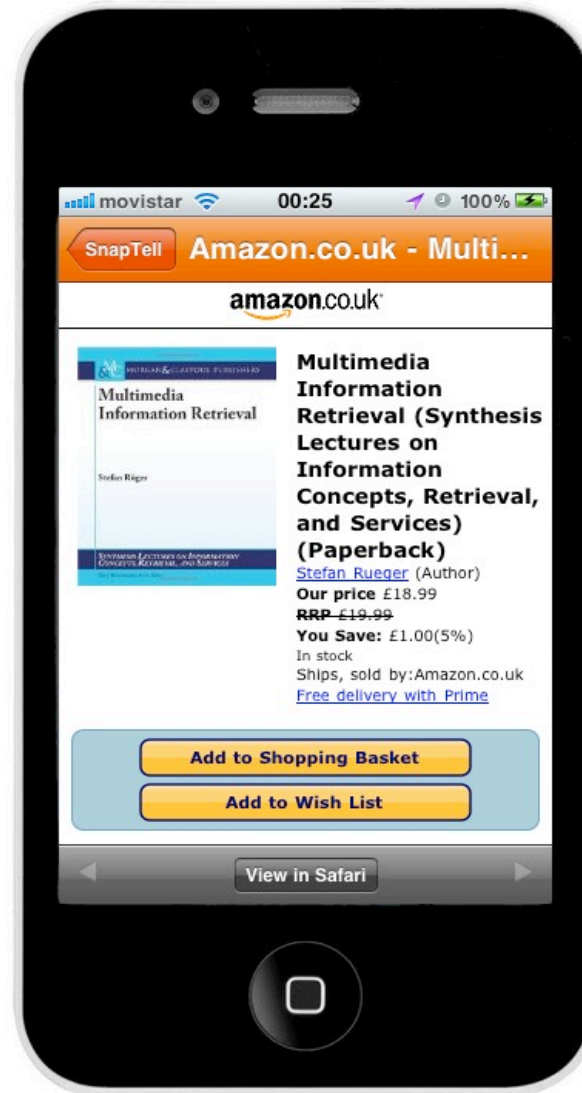
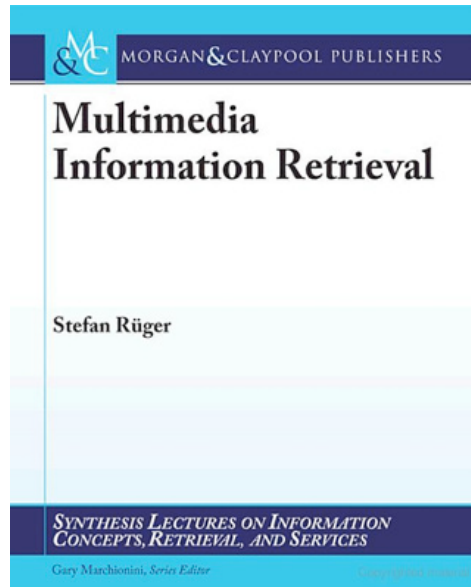


# Snaptell: Book, CD and DVD covers





# Link from real world to databases



doi: 10.2200/S00244ED1V01Y200912ICR010



# The Open University's Spot & Search



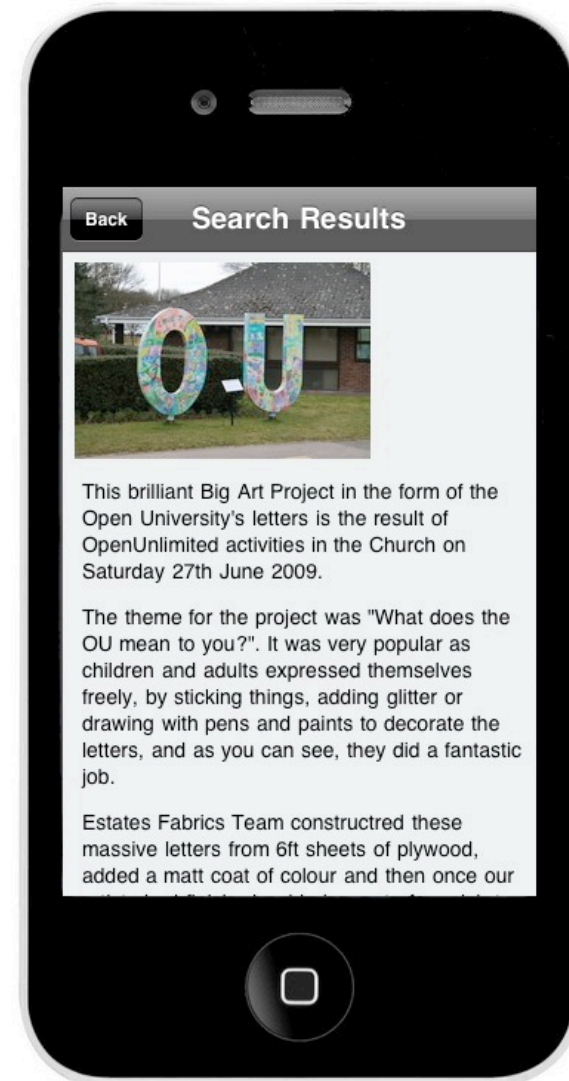
**Scott Forrest:**  $E=MC$  squared

"Between finished surface texture  
and raw quarried stone. Between  
hard materials and soft concepts.  
Between text and context."

[More information](#)



# Spot & Search







## Near duplicate detection

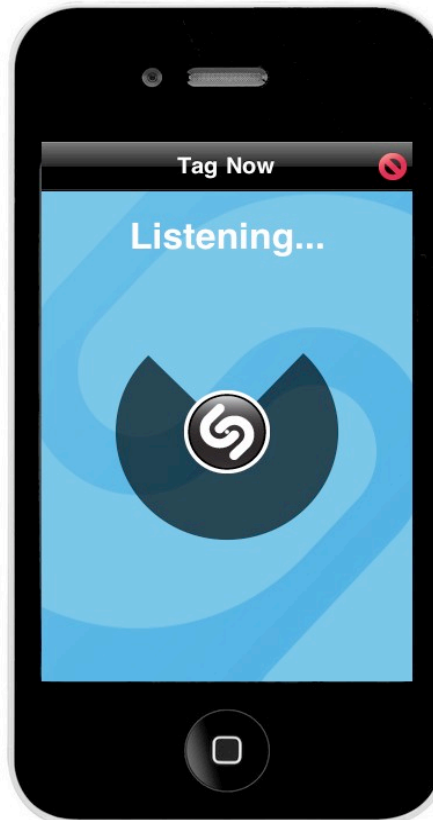
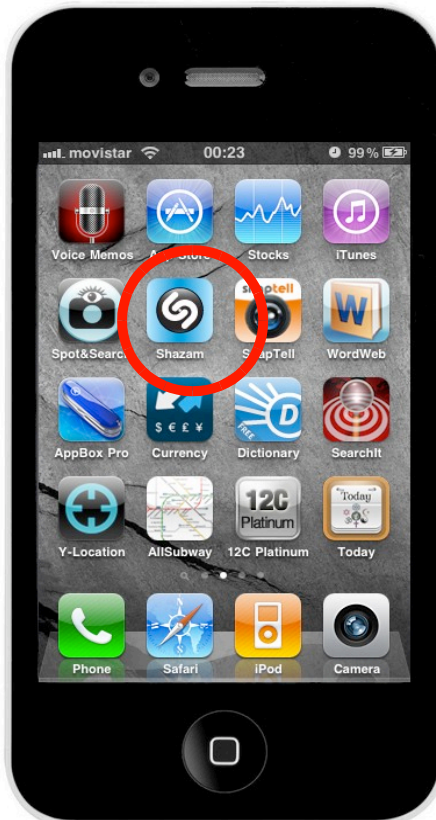
Works well in 2d: CD covers, wine labels, signs, ...

Less so in near 2d: buildings, vases, ...

Not so well in 3d: faces, complex objects, ...



# Shazam





## Near duplicate detection Exercise

Find applications for near-duplicate detection

- be imaginative: the more “outrageous” the better
- can be other media types (audio, smells, haptic, ...)
- can be hard to do



# Near-duplicate detection Where are the challenges?



[Victoria and Albert museum, London, ceramics collection, 2010]





# Leaf detection What are the challenges?





# Venation pattern and shape

Shape is key



[with Frederic Fol Leymarie, Goldsmiths, 2011]