Photo Synthesis through Computer Vision

Microsoft Innovation Day

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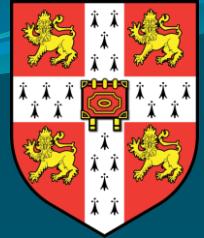
Image Understanding

input → *output*

grass

cow
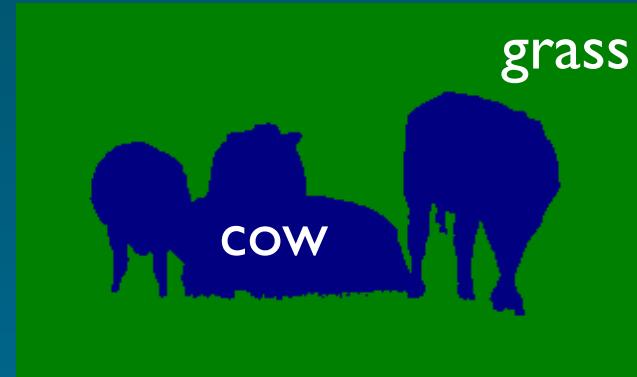
- Our new technique *automatically*:
  - segments image and assigns meaningful semantic labels

- Learns from examples how to exploit patterns of:

Texture   S h a p e   **Context**   I2 A B C I4

Image Understanding

- Automatic labelling of images into semantic classes:

input

output

building	water		building
car	cow	cat	bicycle
road	grass	road	flower	road

colours represent semantic object classes

TextonBoost

**European Conference on Computer Vision 2006**
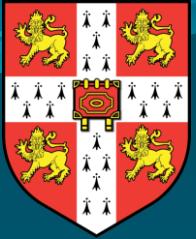
Labelling Images
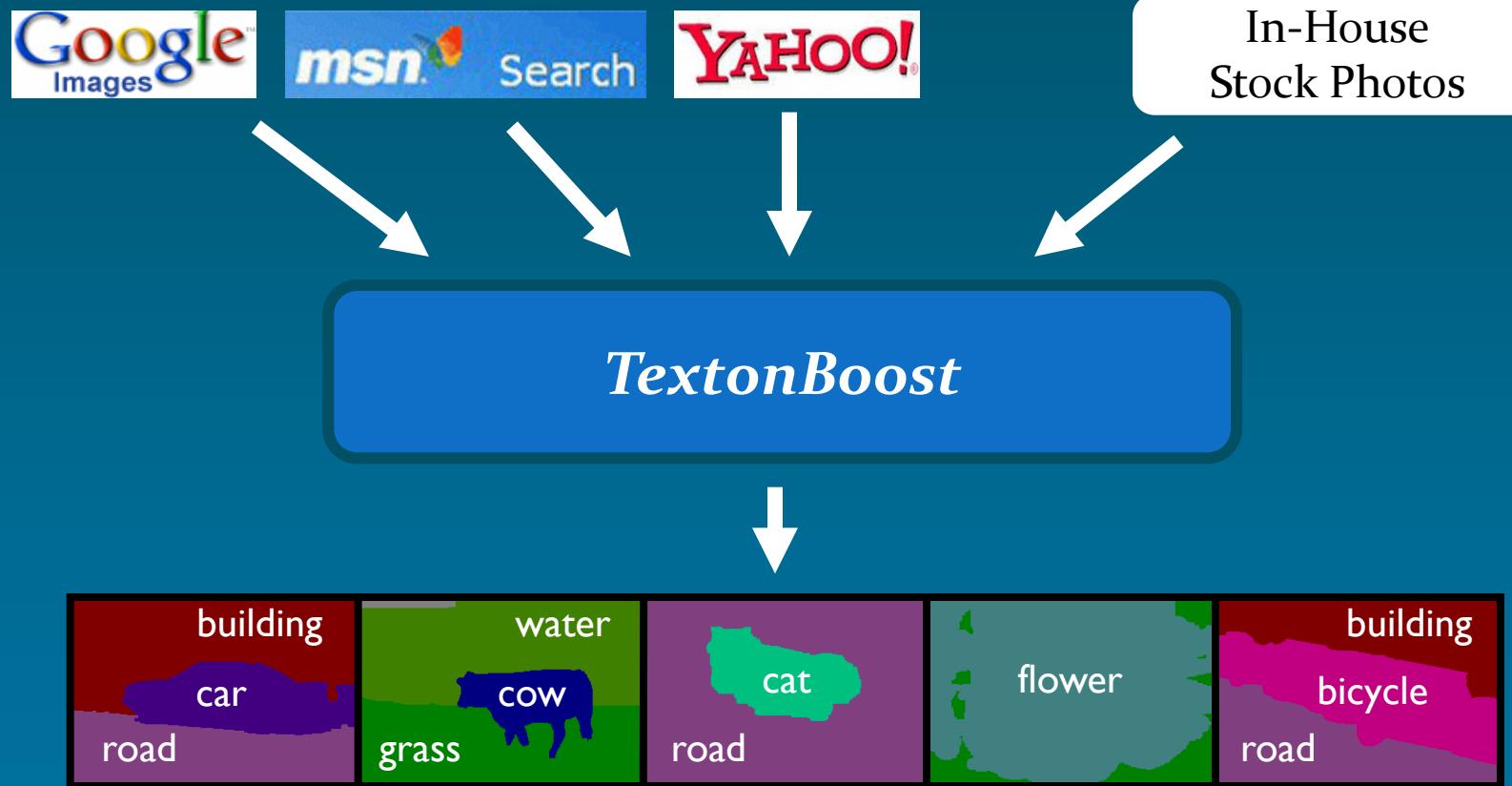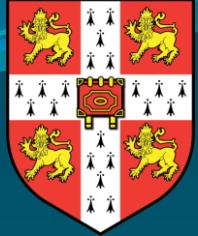
Image Retrieval

- Semantic 'paint' interface:

painting tools

semantic canvas

Image Retrieval

- Semantic 'paint' interface:

Data: "sky" query results
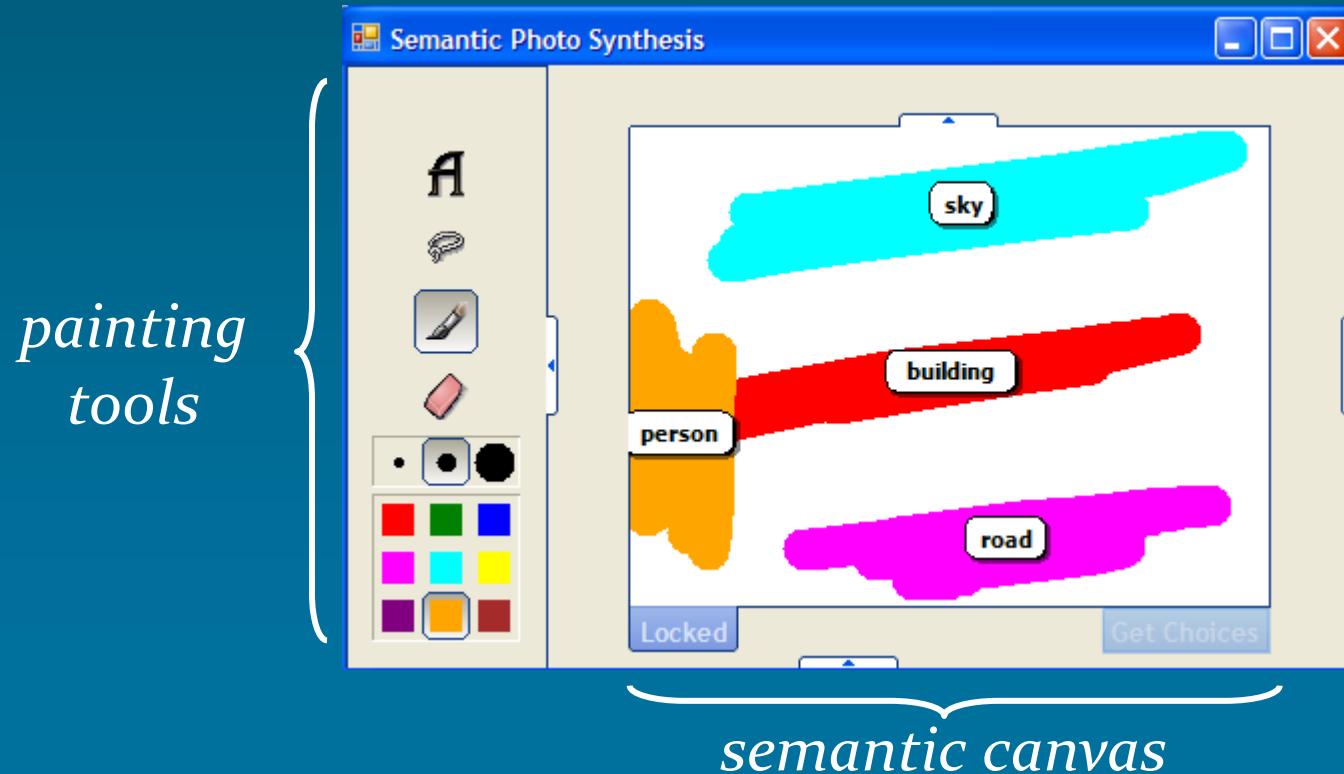
Photo Synthesis

- "Synthesise a picture like this"
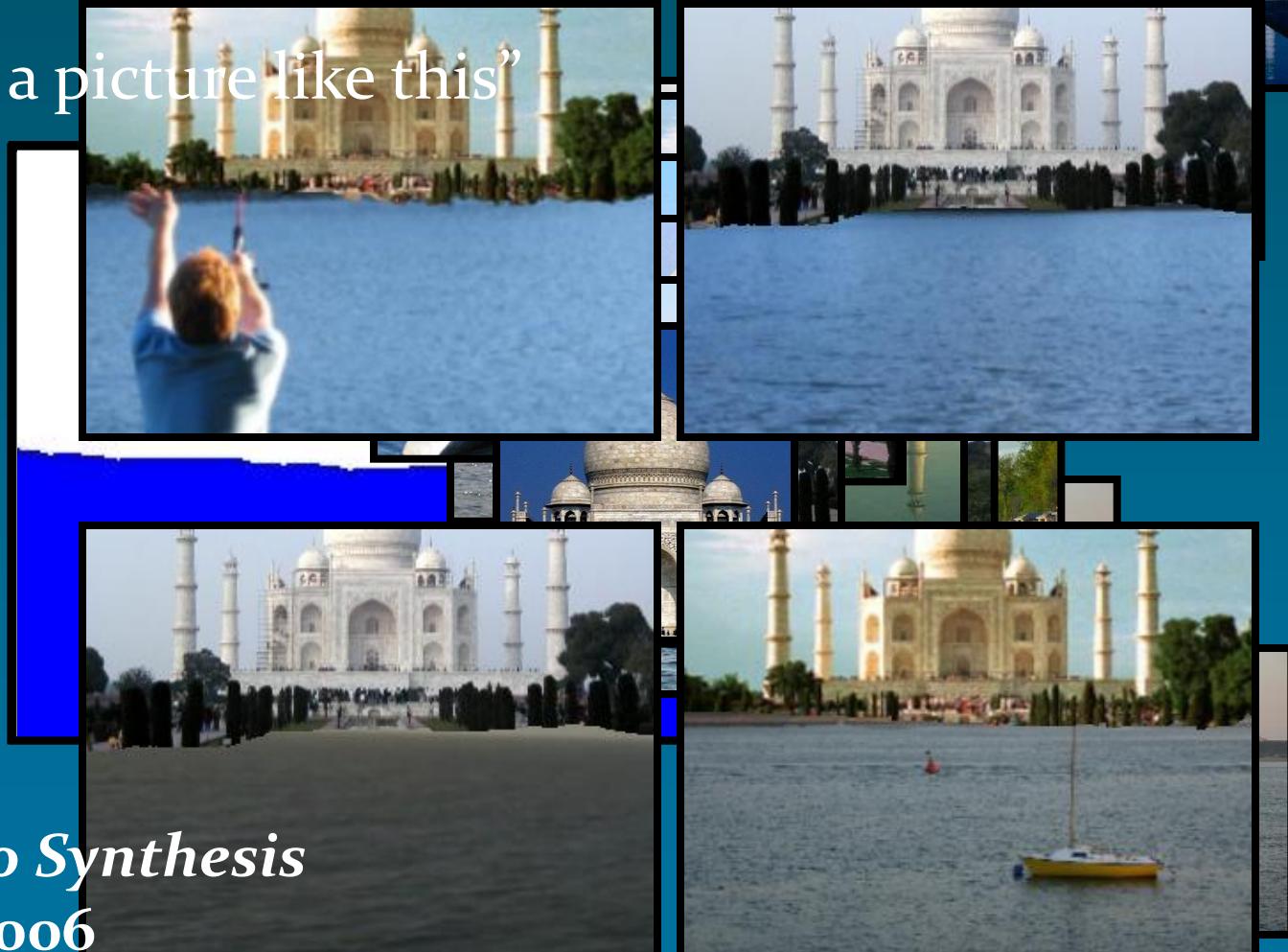
Semantic Photo Synthesis
Eurographics 2006
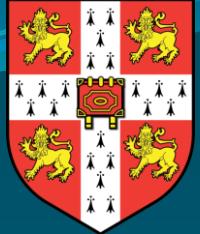
Photo Synthesis
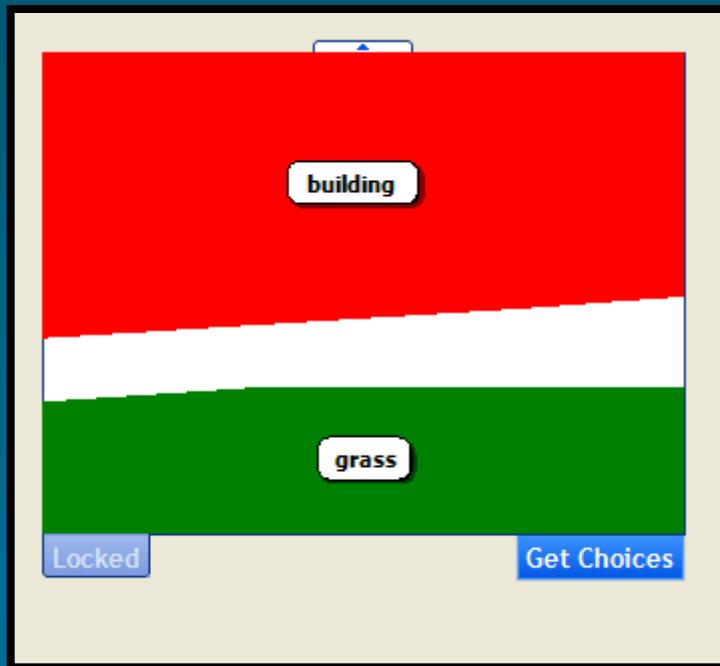
semantic canvas query
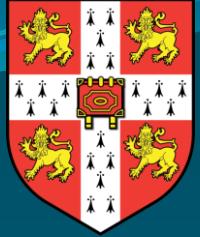
example synthesis results

Photo Synthesis

semantic canvas query

example synthesis result
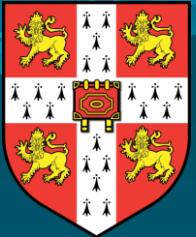
Photo Synthesis

semantic canvas query

example synthesis results

Conclusions

- We can now...

  - **recognise types of objects in images**

  - **retrieve images from large databases**

  - **paint new images using semantics**

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