Search Engines of the Future: The Pharos project
Future technologies: Pharos

Stefan Reuger
OU Researcher: PHAROS
Just imagine you walk around in a city, you see a building you haven't seen before and you take a picture of that particular building on your iphone or on your mobile phone. Would it not be nice then if the iphone told you about this building and recognised it and told you about its architect, about its significance, about its age and so on.

Narrator (VO)
As one of 14 European partners involved in the Pharos project the Open University is developing ways of identifying and searching for audio-visual media.

Suzanna Little
OU Researcher: PHAROS
Traditionally people would search very large collections by entering some text describing what they're looking for. In order to do this type of search somebody would have had to sat down and to have described each of the media objects, that is the images or the video, in words. Now the problem with this is that it's very expensive and very time consuming to have somebody sit down and describe all this media. So what we look at doing with the research and the searches that we are aiming to support is to enable users to supply an image or some other media describing what they're interested in and then the technologies that we develop can take that image and find the relevant information for them.

Stefan Reuger
The bit that we're looking into is how can we analyse images in terms of their features, that are significant and that are unique for a particular image.

Suzanna Little
Image in computer terms is made up of colours and shapes and edges and lines and dots. What we do is we get information from this collection of edges and lines and dots and we find the things that are unique and relevant in each image and then we have mathematical techniques which we can use to determine how similar an image is to another image based on these salient points.

Narrator (VO)
At the natural history museum in London there are literally millions of plant specimens and the task of cataloguing them is enormous.

Dr. Johannes Vogel
Natural History Museum
At the moment the best we can do is probably up to 8000 specimens per man year. With a collection of 6 million that is a task that nobody can afford to pay for any longer. So therefore technical solutions are a way to help us to make these data better accessible. We have lots and lots of 2D objects which have lots and lots of shapes and patterns and it would be much cleverer to search not by the label information but to search by the information that is contained in nature itself and that is the patterns and shapes that we have pressed here with our plants.

Steve Cafferty
Collections Project Manager
We scan the specimens on these. It's just a simple A3 scanner mounted upside down so we don't have to turn the specimen upside down in case we lose parts of the specimen…….and here's the resulting image. You can already see there is a definite pattern and shapes that

are repeated. And they'll be continuous within lots of different specimens of the same species and discontinuous across different species. So the idea would be that people could upload images of plants that they have taken themselves, the software could compare them against a bank of images of specimens from here and then return results – either an identification of the plant the person has uploaded or at least a selection of species that it could be a narrow selection hopefully.

Narrator (VO)
A new partnership between the Open University and the Natural History Museum may one day help access this incredible resource.

Suzanna Little
You can imagine in the future being able to walk out with your camera enabled mobile phone take a picture of a flower, upload that to the website of the Natural History Museum and find out information about it.

Dr. Johannes Vogel
Having tools that allow the public to participate in the identification and the appreciation of their natural surroundings is exactly what the remit of this Natural History Museum is.

Narrator (VO)
As well as great research and educational value the search facility offered some revolutionary commercial opportunities.

Suzanna Little
You can imagine having a collection of catalogue items. So pictures or photographs of objects that are available for you to buy and being able to browse through this catalogue based on the similarity of objects in terms of their colour and their texture. What you might be interested in doing is finding a picture of a pair of red shoes. So we can see here that there is a number of different images and there's one down the bottom here that has a very nice range of reds and oranges. So I'm going to choose that image to further explore this collection of textile objects and we can see in the collection of images that have come up around it. We have a picture here of a red shoe. So if I choose the red shoe image that becomes my query image and I've found a collection of red shoe images now within my database.

Narrator (VO)
In the future, shoppers will be able to use this technology to pick a dress they like and then match the shoes and bags by colour pattern and texture to create the perfect outfit. Whether searching for video clips in a newsroom or identifying buildings in a city this technology has the potential to revolutionise the way that we connect up to the world around us.

Stefan Reuger
It will change the way we expect to be able to interact with are environment. I think people will get used to the idea of taking out their mobile phone and do a visual query rather than typing in numbers they see or scanning in barcodes.