

**Project title:           Big Data Visual Analytics**

**Studentship Code:** FST17

Vast quantities of video and still imagery now exist on the web, both in social media websites and from live capture. Within these images and videos are contained the world's most significant sites, people, objects and events. Subjects are available from varying viewing position and angles, different times of day, changes in season, and period. The availability of large collections of imagery and other relevant metadata presents profound opportunities for computer vision research to develop exciting new applications. The challenge is how to organize, catalogue and retrieve such data in a visually meaningful manner.

The research syndicates knowledge from various fields, such as image processing, computer vision, imaging science, visual science, cluster computing and multi-user interaction. It requires the use of data-driven techniques, which are very hard to model parametrically, but can be approached using Big Data.

PhD research can be undertaken, but it is not limited, to the following areas:

- (1) Recognition, search and semantic analysis of image and video content following state of the art computer vision methodologies. Research will focus towards extracting key visual features from imagery and will use their information to find similarities and thus more meaningful results and/or detect correlations between user's activities over time.
- (2) Explore natural scene statistics in still and video images and investigate relevant computational approaches that also deal with Big Data mining and analysis.

Prospective students may come from a relevant scientific discipline, with a strong Computer Vision interest. They will be engaged in research that seeks to create new knowledge and understanding through the combination of diverse contexts. They will participate to the training programme of the Faculty of Science and Technology and the Graduate School. As part of the Computational Vision and Imaging Technology (CVIT) research group activities, they will have the opportunities to present their work in international recognised conferences and journals.

### **Related publications**

Markos Mentzelopoulos, Alexandra Psarrou, Anastassia Angelopoulou, José García Rodríguez: Active Foreground Region Extraction and Tracking for Sports Video Annotation. Neural Processing Letters 37(1): 33-46 (2013).

Gaurav Gupta, Alexandra Psarrou: Adaptive-Threshold Region Merging via Path Scanning. ICPR 2014: 948-953. (2014).

Triantaphillidou S, Jarvis J. and Gupta G. Spatial contrast sensitivity and discrimination in pictorial images, Proc. IS&T/SPIE Electronic Imaging: Image Quality & System Performance XI, V.9016, 86111A (2014).

### **Contact**

Informal project enquiries to Mr Markos Mentzelopoulos (mentzem@westminster.ac.uk) and general enquiries to Dr Stephen Getting (s.getting@westminster.ac.uk) or Professor Taj Keshavarz (t.keshavarz@westminster.ac.uk).

### **For details of how to apply**

[www.westminster.ac.uk/courses/research-degrees/research-areas/electronics-and-computer-science/research-studentships](http://www.westminster.ac.uk/courses/research-degrees/research-areas/electronics-and-computer-science/research-studentships)