



Detection and tracking of people in public spaces

Sergio Velastin, Digital Image Research Center, Kingston University

The ability of human beings to quickly locate and track other humans is still not fully understood and it is at the centre of many of the things that we do on a daily basis: interact with other people, negotiate a path in a crowded space, understand films, play games and so on. This ability is almost independent of environmental conditions and one's own movements. The talk will describe a possible approach to the detection and tracking of people in video sequences, explaining some basic principles and providing examples of real applications (such as monitoring public streets).

Prof. Sergio A Velastin, Professor of Applied Computer Vision, Digital Imaging Research Centre, Kingston University, UK. Fellow of the IET (Institution of Engineering and Technology) and Senior Member of the IEEE. Prof Velastin has been working for more than 20 years on the applications of computer vision for pedestrian detection and tracking especially in the context of improving personal security and safety in public spaces such as in public transport networks.

Coal characterisation by the means of digital image processing

María Patricia Trujillo, Universidad del Valle.

Coals vary in density, porosity, hardness and reflectivity. Morphology features are used for a proper characterisation of coal samples in order to predict adequately the behaviour of coal in power plants, impacts on the environment and the operation of combustion equipment. The talk will present and discuss a set of image processing techniques used to characterise samples of coal, explaining some basic principles and providing examples.

Maria Trujillo, Phd, is an Associate Professor at the School of Engineering Systems and Computing, Universidad del Valle, Cali, Colombia. Dr. Trujillo has been working the last 10 years on the applications of computer vision in the solution of problems in the fields of coal mining and medical images.

Biometric face recognition as fundamental tool in security and authentication

Ebroul Izquierdo, Queen Mary, University of London

Nowadays, society faces serious problems derived from heightened vandalism and more critically the fatal consequences of terrorist activities. However, advances in computer vision and multimedia signal processing are providing key tools to solve or at least lighten such societal problems. In this context automated recognition of people and their most fundamental characteristics or traits plays a crucial role. Face recognition is one of the main biometric tools used for automated enhancement of security and person authentication in critical events.



In this talk several important biometric tools for security and person authentication will be outlined. Then, automated face recognition technology will be presented and discussed. The many applications of this technology will be described including: visual information retrieval, remote and local surveillance, event tracking and forensics.

The talk will refer to important mathematical and statistical tools used to achieve highly accurate face recognition, as well as, the advantages and disadvantages of available algorithmic solutions. The state-of-the art and cutting edge achievements in the field will be illustrated. Finally still open questions in the area will be outlined and some key related international R&D projects will be introduced.

Ebroul Izquierdo, PhD, MSc, CEng, FIET, SMIEEE, MBMVA, is Chair of Multimedia and Computer Vision and head of the Multimedia and Vision Group in the school of Electronic Engineering and Computer Science at Queen Mary, University of London. For his thesis on the numerical approximation of algebraic-differential equations, he received the Dr. Rerum Naturalium (PhD) from the [Humboldt University](#), Berlin, Germany. He has been a senior researcher at the [Heinrich-Hertz Institute for Communication Technology \(HHI\)](#), Berlin, Germany, and the Department of Electronic Systems Engineering of the [University of Essex](#).

Prof. Izquierdo is a Chartered Engineer, a Fellow member of the The Institution of Engineering and Technology (IET), a senior member of the IEEE, a member of the British Machine Vision Association, past chairman of the IET professional network on Information Engineering, member of the Visual Signal Processing and Communication Technical Committee of the IEEE Circuits and Systems Society and member of the Multimedia Signal Processing technical committee of the IEEE. Prof. Izquierdo is or has been associated and guest editor of several relevant journals in the field including the IEEE Transactions on Circuits and Systems for Video Technology, the IEEE Transactions on Multimedia, the EURASIP Journal on Image and Video processing, the Elsevier journal Signal Processing: Image Communication, The EURASIP Journal on Applied Signal Processing, the IEE Proceedigs on Vision, Image & Signal Processing, the Journal of Multimedia Tools and Applications and the Journal of Multimedia. He has been member of the organizing committee of several conferences and workshops in the field and has chaired special sessions and workshops in ICIP, ICASSP and ISCAS. He has been the general chair of the European Workshop on Image Analysis for Multimedia Interactive Services, London 2003 and Seoul 2006, the European Workshop for the integration of Knowledge, Semantics and Content, London 2004 and 2005, the Mobile Multimedia Communications Conference MobiMedia, Algero2006, the International Conference on Content Based Multimedia Indexing, London 2008 and the IET Conference on Visual Information Engineering, Xian 2008.

Prof. Izquierdo has received several awards in international for a including the best paper award at the Medical Image Analysis and Understanding conference 2010. Prof. Izquierdo holds several patents in the area of multimedia signal processing and has published over 450 technical papers including chapters in books.