

3 Ottobre 2012 ore 11.00

Aula Hume

Automatic Reasoning under Uncertainty for Visual Object Recognition and Classification

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The development of statistical models for the problem of visual object classification is currently one of the main research topics in the areas of computer vision, machine learning and artificial intelligence. Ultimately, the main goal of a visual object classification system is to analyse a digital image and determine the presence of sought visual objects, along with their 2-D location in the image and a rough 3-D pose. State-of-the-art methods represent a visual object with a set of local image descriptors and impose strong constraints in the model to make the problem computationally tractable. These methods often disregard the geometric information of the local descriptors, or impose unrealistic constraints on the visual object (e.g., object is inanimate or rigid) or the model structure (e.g., small graphs with no loops). Hence the types of objects that can be recognised are limited. We plan to investigate a new object matching approach that combines both the appearance and geometry of local descriptors without imposing the strong constraints above, thereby enabling the recognition of a much larger class of objects. In this presentation, we will show current approaches to solve the visual classification problem and a list of problems we plan to investigate.



Gustavo Carneiro has joined the School of Computer Science at the University of Adelaide as a senior lecturer in 2011. From 2008 to 2011 Dr. Carneiro was a Marie Curie IIF fellow and a visiting assistant professor at the Technical University of Lisbon (Instituto Superior Tecnico) within the Carnegie Mellon University-Portugal program (CMU-Portugal). From 2006 to 2008, Dr. Carneiro was a research scientist of the Integrated Data Systems Department at Siemens Corporate Research in Princeton, USA. In 2005, he was a post-doctoral fellow at the the University of British Columbia with Professor David Lowe and at the University of California San Diego with Professor Nuno Vasconcelos. Dr. Carneiro received his Ph.D. in computer science from the University of Toronto under the supervision of Professor Allan Jepson in 2004. Gustavo Carneiro is originally from Brazil.