Curriculum Vitae for Dr. Sina Samangooei

ss@ecs.soton.ac.uk

Education

PhD in Computer Science
University of Southampton **2006 - 2010**

Title: Semantic Biometrics
Supervisor: Prof. M. S. Nixon

- Explored the ability of human understandable semantic descriptions towards improved identification and retrieval of individuals in biometrics enabled surveillance applications
- Designed a system for efficient gathering and storage of semantic human descriptions against arbitrary biometric sources, integrating the system with Southampton Biometric Tunnel project while aiding in its development
- Designed algorithms for effective fusion of semantic terms with automatic visual components, displaying improved recognition of individuals when human semantic descriptions are considered
- Developed the first algorithms for the automatic semantic annotation of biometric data sources, demonstrating the ability of such approaches when applied to both existing and novel gait biometric datasets.

MEng Computer Science, First Class
University of Southampton **2002 - 2006**

Dissertation
Content Based Image Comparison and Retrieval using Sketch Analysis. A full system, from feature extraction to integration with existing web image sources, for retrieving images using a quick sketch as the query.

Industrial Group Project
Obstruction management at Southampton Airport. A visualisation tool for management of runway dimension re-declaration on event of obstructions. A simplified version of the completed project formed the skeleton for a second year group project assigned to BSc Computer Scientists that year.

Individual Research Project
A review of automatic annotation and semi-automatic annotation techniques in multimedia. An exploration of the state of the art for annotation of music, images and videos. This included fully automatic techniques as well as approaches where automatic techniques assisted manual annotation

Selected modules/achievements:

- *Operating Systems* producing a 32-Bit Real-time Operating System using C
- *Communications and Networks* producing a HTTP web-server using Java
- *Interactive Entertainment Systems* producing a fully playable computer game using C++/OpenGL

A levels
Greenshaw High School **2000 - 2002**

A level Maths (A), Physics (A), ICT (A). AS level Economics (B)

Research Interests

The development and application of novel approaches in Machine Learning and Computer Vision to address the exploration and effective utilisation of Large Scale Multimedia Corpa by humans, including: Multimedia retrieval through semantic and content based queries; Automatic annotation of multimedia artifacts towards machine understanding of scenes and objects; Human and Object recognition for applications in pervasive computing and surveillance.

Professional Experience

Research Fellow
University of Southampton **2010 - present**

- Investigating scalable solutions for large-scale image retrieval tasks
- Exploring robust techniques for automatic image understanding
- Developing a suite of web services providing access to such algorithms for third party application development

Research Assistant
University of Southampton **2009 - 2010**

- Web developer on the Lifeguide research project
- Assisted in the construction of community features of the lifeguideonline.org website
- Developed several key components of jQTI, a Java implementation of the QTI question/answer specification

Technical Research Staff
University of Southampton **Summer 2005**

- Performed initial research on the EU funded eChase project
- Created the first prototype of the Mediaengine portion of the eChase system
- Wrote Java interface with backing C++ FVS content based image comparison algorithms
- Wrote web service interface allowing FVS algorithm traversal of large image collections and comparisons of collections with provided inputs

Technical Staff
IT-Innovation **Summer 2004**

- Joined final portions of the EU funded Sculpteur project
- Improved the JSP Based interface
- Created multiple front ends in CSS for the system to match designs used by project partners (e.g.

V&A Museum)

Skills

Technical Skills

- **Highly skilled programmer**. Experience in **Java** (and other JVM lanauges including **Groovy**), **Python** and **C++** along with experience in **Matlab**, **Ruby**, **Prolog** and **Scheme**
- Experienced database administrator, highly skilled in **SQL** with some experience with **ORM** database models (e.g. **SQLAlchemy**)
- **Experienced web programmer**. Confident in both server side programming (**Grails**, **PHP**, **JSP** and **Pylons**) as well as client side scripting (**javascript+jQuery**, **HTML** and **CSS**)
- **Confident unix administrator**. Experience using **shell tools** to maintain research and production systems
- Extensive experience with MS Windows (all versions), Mac OS (Tiger and Leopard) and many Linux environments

Other Positions of Responsibility

- President of the Southampton University Circus Society, 2005
- Co-organiser of the ISIS Postgraduate Conference 2008

Participation in Recent Research Projects

LivingKnowledge (€4,900,000 – EU/IST [FP7])
Research Fellow **2010 - 2012**

Currently employed 1/2 FTE on this project

LiveMemories (€3,900,000 – The autonomous province of Trentino, Italy)
Research Fellow **2010 - 2011**

Currently employed 1/2 FTE on this project

Teaching Experience

Given guest lectures to 3rd year undergraduate students on the “Multimedia systems” course in 2009 and 2010.

Some involvement in supervision of 3rd year undergraduate individual research projects (IRP).

Teaching and Marking (since 2007) in 1st year computer science courses including Data Structures and Algorithms.

Attended Teaching for Research Staff introductory course (2011)

Publications In Progress

Hare, J., Samangooei, S., Dupplaw, D., Lewis, P. ImageTerrier: A platform for scalable high-performance image retrieval. Submitted to: *ACM MM'11: ACM Multimedia*, November 28th 2011, Scottsdale, Arizona, USA. (submitted)

Hare, J., Samangooei, S., Lewis, P. Introducing OpenImaJ: An open source image processing and

retrieval library written entirely in java. Submitted to: *ACM MM'11: ACM Multimedia. Open Source Competition*, November 28th 2011, Scottsdale, Arizona, USA. (in progress)

Samangooei, S., Hare, J., Lewis, P. Massively Parallel Image Retrieval using Hadoop. (in progress)

Publications

Hare, J. S., Samangooei, S. and Lewis, P. (2011) Efficient clustering and quantisation of SIFT features. In: *Proceedings of the ACM International Conference on Multimedia Retrieval (ICMR 2011)*.

Williams, S., Yardley, L., Wills, G., Samangooei, S. and Gilbert, L. (2010) A Virtual Research Environment (VRE) to Support Sharing and Collaboration in Internet Intervention Projects. In: *Med-e-Tel 2010*, 14-16 April 2010,, Luxembourg. pp. 518-522.

Samangooei, S. and Nixon, M. (2010) Performing content-based retrieval of humans using gait biometrics. *Multimed Tools Applications*, 49 (1). pp. 195-212.

Samangooei, S. and Nixon, M. (2008) Performing Content-based Retrieval of Humans using Gait Biometrics. In: *SAMT 2008*, 2/12/2008, Koblenz. pp. 105-120.

Samangooei, S., Nixon, M. and Guo, B. (2008) The Use of Semantic Human Description as a Soft Biometric. In: *Biometrics: Theory, Applications, and Systems*, Sept. 29-Oct.1, 2008, Washington, USA.

Seely, R. D., Samangooei, S., Middleton, L., Carter, J. and Nixon, M. (2008) The University of Southampton Multi-Biometric Tunnel and introducing a novel 3D gait dataset. In: *Biometrics: Theory, Applications and Systems*, 29th September 2008, Hyatt Regency Crystal City, Washington DC, USA.

Hare, J., Samangooei, S., Lewis, P. and Nixon, M. (2008) Semantic spaces revisited: investigating the performance of auto-annotation and semantic retrieval using semantic spaces. In: *CIVR '08: The 2008 international conference on Content-based image and video retrieval*, July 7-9 2008, Niagara Falls, Ontario, Canada. pp. 359-368.

Referees

Professor Mark S. Nixon

Information: Signals, Images, Systems Research Group, School of Electronics and Computer Science, University of Southampton, Southampton, Hampshire, SO17 1BJ Phone: +44 (0)23 8059 3542 • E-Mail: msn@ecs.soton.ac.uk

Professor Paul Lewis

Intelligence, Agents, Multimedia Group, School of Electronics and Computer Science, University of Southampton, Southampton, Hampshire, SO17 1BJ Phone: +44 (0)23 8059 3715 • E-Mail: phl@ecs.soton.ac.uk

Dr Gary Willis

Learning Societies Lab, School of Electronics and Computer Science, University of Southampton, Southampton, Hampshire, SO17 1BJ Phone: +44 (0)23 8059 2831 • E-Mail: gbw@ecs.soton.ac.uk