Job Description-RS13056

Post Title: Research Fellow (Software Engineering, Autonomous Systems)

Grade: 6

Faculty/Department: School of Systems Engineering

Reports to: Atta Badii

Responsible for: None

Purpose
To work as required at the Intelligent Systems Research Laboratory (ISR) in the designated RTD areas on funded research projects and carry out relevant research including pro-active task management and coordination within a highly teamwork oriented project environment.

To engage in technical communication, documentation and such duties as appropriate in a collaborative research environment and take responsibility for all research contract compliance matters for relevant assigned tasks.

Main duties and responsibilities
The duties may at any time consist of all or any of the following sets depending on the role assigned within projects:

- Act on the basis of a research objectives brief and advice from the ISR Director and in turn take the lead within the assigned projects to progress the work effectively on own initiative within agreed boundaries and deadlines.

- Perform and lead specific RTD research-related activities involving all the lifecycle stages (e.g. documentation of objectives, requirements analysis, systems specification and design, implementation, integration, conformance testing and evaluation), technical reporting, and, publication of results.

- Provide accurate time logging record for such RTD activities.

- Complete assigned tasks and their documentation effectively and within agreed deadlines and liaise appropriately with the ISR Director and other ISR staff as well as with counterparts in Partner organisations as required.
• Hold meetings (including conference calls via Skype/phone) as required for synchronisation of work with other ISR staff and with ISR research collaborators (e.g. European Partners).

• Pro-actively pursue opportunities for publication of research results as cleared for publication by the ISR Director; accordingly produce publication plans to be agreed within the team and with the ISR Director.

**Supervision received**
The ISR Director will supervise and provide appropriate general and specific guidance, assistance and support at all stages as required.

**Supervision given**
This is an exciting career role with the possibility of gaining experience in and exercising your potential at cross-project Research Leadership responsibilities for all aspects of RTD project management with respect to an agreed portfolio of projects. The scale of supervision assignment will depend on the demonstration of the pre-requisite capabilities by the post-holder but the road is open to relevant training opportunities to gain such experience.

**Contact**
ISR Director and Staff, School of Systems Engineering and ISR Administration, University HR, EU-funded Projects Partners as appropriate.

**Terms and conditions**
The appointment is offered on a fixed term 1-year basis in the first instance. There are no specified hours of work, but you will be required to work such hours as are necessary to carry out the duties associated with the post.

Overtime is not payable.

Some travel to other European research centres may be necessary. Must respect IPR and related Non-disclosure Agreements as may be in force on specific research contracts between the University of Reading and other Partner organisations.

This document outlines the duties required for the time being of the post to indicate the level of responsibility. It is not a comprehensive or exhaustive list and the line manager may vary duties from time to time which do not change the general character of the job or the level of responsibility entailed.

**Date assessed: 17 July 2013**
## Person Specification-RS13056

**Job Title:** Research Fellow (Software Engineering, Autonomous Systems)  
**School/Department:** Systems Engineering

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<tr>
<th>Criteria</th>
<th>Essential</th>
<th>Desirable</th>
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| **Skills Required** | • Excellent time management  
                      • Software Engineering skills  
                      • Technical report writing.  
                      • Project management skills and deliverables management  
                      • Communication and interpersonal skills  
                      • Research and learning skills | • Presentation skills and public speaking  
                      • Language skills in one of the European Languages for example French, German, Italian |
| **Attainment**     | • Education to BSc (Honours) or MSc (Computer Science) with a background in software engineering, autonomous agents and machine learning |                                                                                               |
| **Knowledge**      | • Excellent Programming skills in C++ and Java  
                      • Sensor Fusion, Situation Assessment, Semantic Modelling  
                      • Autonomous Agents, Machine Learning and Pervasive-Cooperative Ambient Intelligence  
                      • Autonomous Systems, Machine Learning and Pervasive-Cooperative Ambient Intelligence  
                      • Semantic Workflow Integration, AI Planning, AI Search  
                      • Image and Speech Understanding  
                      • Knowledge of Internet-enabled and Mobile Communications Technologies  
                      • Agent Technologies  
                      • Cloud Services  
                      • 3D Immersive Media  
                      • Serious Gaming | Working knowledge in any of: AI Planning/Search...  
                      • Natural Algorithms (ANNs, GAs), Fuzzy Logic, Case Based Reasoning  
                      • Standards such as XML, SOAP, .NET etc  
                      • Scripting Languages such as JavaScript  
                      • Secure Personalisation and Recommender Systems Technologies  
                      • Agent Technologies for Affective Interfaces Design – Affective Computing using advanced multi-modal interfaces (e.g. ECAs, VLEs)  
                      • Some qualification or training in computer networking and Client Server Architectures |
| Management, |
| Human Robot Teamwork |
| Relevant Experience | • Experience of working on software engineering projects carrying out independent ICT research projects against specific objectives and deadlines |
| Disposition | • Ability to work on own initiative, flexible to work to the requirements of the projects, team-work oriented, professional conscientious attitude |
| Other | • Willingness to travel on research project meetings and conferences (Europe and USA) |

Completed by: Atta Badii

Date: 17 July 2013
Further particulars relevant to the vacancies as advertised for the
Intelligent Systems Research Laboratory (ISR)
School of Systems Engineering (Computer Science)
University of Reading

The University
The University of Reading is in the top 1% of Universities worldwide and is known as one of the leading research-intensive universities in the UK.

The School
The School, with its unique mix of academic disciplines in Computer Science, Cybernetics, Information and Communication Technologies (ICT), is well placed to both develop and exploit the emerging technologies that will play a key role in wealth creation and in defining the way the information society both works, and plays, into the future. We offer a wide range of undergraduate degree programmes, including single subject degree and postgraduate taught or PhD research programmes in the fields of Computer Science, Cybernetics, and Electronic Engineering, joint degrees in these areas, as well as courses with other subjects, such as Information Technology and Business.

The Research Group (ISR)
The Multi-disciplinary Intelligent Systems Research Laboratory (ISR) at the School of Systems Engineering, University of Reading, provides an active environment for interdisciplinary collaborative research, and knowledge transfer in Systems Engineering, Applied Computing and Informatics. ISR carries out advanced collaborative research in Human-Robot Interaction and CompanionAble Robotics, FPGA applications, networked multimedia applications for Affective Computing, Smart proxy-enabled Media Transcoding and Adaptation, Collaborative and Social Computing, Privacy and Security Enhancing Technologies, Bio-informatics approaches to malware detection, attack pattern modelling and prediction, Secure Service-oriented Software Engineering, Profiling and Personalisation Technologies as underpinned by semantic architectures.

ISR has a strong record in conducting advanced usability research which has seen the development of new paradigms for Dynamic User-Intimate Co-Design and Evaluation of Information Systems.

The Collaborative Research Projects
The successful candidates will work on EU-Funded research projects involving the following areas:

1. 3D-Immersive Media Experience Environments (spatial, sound and vision)
2. Scene Understanding, Gait Analysis, Image Tracking, Video Analytics
3. Ambient-Assistive Living, Smart Homes, Human-Robot-Interaction, Dialogue Management
4. Multi-modal Model-driven and Service-Oriented Architectures for Ambient Intelligence, Affective and Pervasive Computing to serve secure service provisioning (e.g. ECAs)
5. Multi-modal Multimedia Indexing and Retrieval, Digital Libraries

6. Network-centric Systems, Sensor Networks, Middleware to support the Internet of Things & Services


8. Automating Production of Cross Media Content for Multi-channel Distribution including Digital Rights Management, multi-modal encoding and indexing of multimedia for information retrieval and advanced query support, smart proxy-enabled multimedia transcoding and dynamic adaptation for on-demand personalised distribution to interactive TV and mobile clients.

Research areas of interest to ISR include:

1. Knowledge Based Systems, Semantic Modelling - Virtualisation

2. Ambient Intelligent Environments

3. Companionable Robotics

4. Rehabilitation Robotics

5. Trustworthy Internet of People Things and Services (IoPTS), Social Media

6. Computer Networks Security

7. Distributed Multimedia Databases and Information Retrieval

8. Workflow Integration

9. Human-Robot Interaction

10. Abstract Hardware Design, Embedded Systems - FPGA Technology

For example:

- Optimisation of integrated symbolic and sub-symbolic inference systems for real-time Pattern Recognition problem domains
- Advanced Model-driven Software Engineering for context-aware computing involving semantic modelling, knowledge repositories and virtual data models
- Natural Algorithms (ANNs, GAs), Data Mining, Fuzzy Logic, Case Based Reasoning
- Multimedia Systems Programming and Agent Technologies for Affective Interfaces Design – Affective Computing and new Media Entertainment Computing using advanced multi-modal interfaces (e.g. ECAs, VLEs)
- Automated Music Synthesis and Composition, Semantic Music Representation
- Speech and Language Technologies (Speech Recognition, Natural Language Processing)
- Secure Personalisation and Recommender Systems Technologies
- Multi-modal Multimedia Encoding, Image Processing