

Research Role Profile

<b>Job Title:</b>	Research Fellow (1A)
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<b>Responsible to:</b>	Head of research group, or principal investigator
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<b>Responsible for:</b>	Not applicable
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<b>Job Summary and Purpose:</b>
To undertake research in accordance with the specified research project(s) under the supervision of the principal investigator.

<b>Main Responsibilities/Activities</b>
<p>To undertake a range of research activities within a specified research area, assuming responsibility for specific areas of projects and making use of new research techniques and methods, in consultation with the research award holder or supervisor. This may include fieldwork, interviews, laboratory experimentation, critical evaluation and interpretation, computer-based data analysis and evaluation or library research.</p> <p>Using initiative and creativity to identify areas for research develop new research methods and extend the research portfolio. Analysing and interpreting results of own research. Write up results and prepare papers for submission to appropriate journals and conferences, and other outputs as required and/or appropriate. Attend appropriate conferences for the purpose of disseminating research results of personal development. The post holder may also contribute to writing bids for research grants and will contribute to collaborative decision making with colleagues in areas of research.</p> <p>Continually to update knowledge and develop skills, and translate knowledge of advances in the area into research activity.</p> <p>To plan and manage own research activity in collaboration with others. To carry out administrative tasks associated with specified research funding, for example risk assessment of research activities, organisation of project meetings and documentation. Implementation of procedures required to ensure accurate and timely formal reporting and financial control.</p> <p>To contribute to teaching in the Faculty by carrying out student supervision and/or demonstrating within the post holder's area of expertise and under the direct guidance of a member of departmental academic staff, as appropriate.</p> <p>The post holder may occasionally be required to supervise more junior research staff.</p>

## Research Role Profile

### Person Specification

#### The post holder must have:

A doctoral degree in a relevant discipline (although individuals who have almost completed a doctoral degree may be appointed). Consideration may also be given to individuals who do not hold a doctoral degree but have required skills based on a number of years experience in specified / relevant fields

The post holder will have authority over some aspects of project work and must be capable of providing academic judgement, offering original and creative thoughts and be able to interpret and analyse results.

### Relationships and Contacts

Direct responsibility to the principal investigator or academic supervisor. The post holder may be asked to serve on a relevant Faculty committee. There may be additional reporting and liaison responsibilities to external funding bodies or sponsors. The post holder may work on original research tasks with colleagues in other institutions.

### Special Requirements

To be available to participate in fieldwork as required by the specified research project

#### All staff are expected to:

- Positively support equality of opportunity and equity of treatment to colleagues and students in accordance with the University of Surrey Equal Opportunities policy.
- Help maintain a safe working environment by:
  - Attending training in Health and Safety requirements as necessary, both on appointment and as changes in duties and techniques demand
  - Following local codes of safe working practices and the University of Surrey Health and Safety Policy
- Undertake such other duties within the scope of the post as may be requested by your Manager.

Research Role Profile

Addendum to Role Profile

<b>Job Title:</b>	Research Fellow in Machine Listening
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**Job Summary and Purpose:**

This information sheet should be read in conjunction with the accompanying generic Research RA1A Role Profile and will be used for shortlisting processes. More specifically the post holder will be expected to:

- (i) Investigate and develop methods for “machine listening” - machine learning methods for computational analysis of sounds scenes and events - leading to new representations to support search, retrieval and interaction with sound;
- (ii) Investigate a range of methods for this purpose, such as deep learning, blind source separation, blind dereverberation, object-based audio modelling, and statistical models of audio textures;
- (iii) Autonomously undertake the design, development and implementation of novel machine listening algorithms;
- (iv) Meet on a weekly basis with project staff, and attend project meetings and present results at other sites as required;
- (v) Publish and present research in high-quality international journals and conferences.
- (vi) Pro-actively organise and manage own time and research-related activities.
- (vii) Report orally and prepare papers reporting progress and delivery of project outcomes, and be able to communicate at both technical and high-level for example with project research partners.
- (viii) Perform any other duties associated with the project, as deemed appropriate to the grade by the Principal Investigator.
- (ix) Promote the research and activities of the project and the Centre for Vision, Speech and Signal Processing (CVSSP) in national and international forums.

**Main Responsibilities/Activities**

Research in machine learning methods for computational analysis of sounds scenes and events

Meet on a weekly basis on campus with CVSSP staff

Attend project meetings and present results at other sites as required

Give oral and written reports on project progress and outcomes. Be able to report at both a technical low-level and conceptual high-level to a range of audiences including the public and industry

## Research Role Profile

Continually update knowledge and develop skills

Carry out routine administrative tasks associated with a specified research project, for example risk assessment of research tasks, organisation of project meetings and documentation. This will entail planning own day-to-day research activity within the framework of the agreed programme, dealing with problems that may affect the achievement of research objectives and deadlines and implementing procedures required to ensure accurate and timely delivery.

### Person Specification

#### The post holder must have:

Doctoral level research experience in electronic engineering, computer science or a related subject;

Significant research experience in audio signal processing and machine learning

Skills and experience in developing new research algorithms or methods, using languages such as Python, C++ and/or MATLAB, with relevant signal processing and/or machine learning tools

Ability to work independently, with strong organisational and time management skills

#### The post holder would ideally have:

Research experience in one or more of the following is desirable: deep learning; blind source separation, blind de-reverberation, sparse and/or non-negative representations, audio feature extraction

Strong writing skills across different levels of technical audience are desirable

A track record of academic publications in a relevant area is desirable

### Relationships and Contacts

Direct responsibility to Principal Investigator Prof Mark Plumbley, together with Co-Investigators Dr Wenwu Wang and Dr Philip Jackson

## Research Role Profile

### **Additional Background Information**

This post is part of an EPSRC-funded project “Making Sense of Sounds”. The project will be led by Prof Mark Plumbley in the Machine Audition Lab of the Centre for Vision Speech and Signal Processing (CVSSP) at the University of Surrey, in collaboration with the Digital World Research Centre (DWRC) at Surrey and the University of Salford.

The aim of the project is to investigate how to make sense from sound data, focussing on how to convert sound recordings into understandable and actionable information: specifically how to allow people to search, browse and interact with sounds. In the project, we will investigate and develop new signal processing methods to analyse sound and audiovisual files, new interaction methods to search and browse through sets of sound files, and new methods to explore and understand the criteria searchers use when searching, selecting and interacting with sounds. The perceptual aspect will also investigate people's emotional response to sounds and soundscapes, assisting sound designers or producers to find audio samples with the effect they want to create, and informing the development of public policy on urban soundscapes and their impact on people.

The post holder will be responsible for investigating and developing machine learning methods for separation and analysis (“audition”) of everyday sounds, leading to new representations to support search, retrieval and interaction with sound. The post holder will be based in CVSSP and work under the direction of PI Prof Plumbley and Co-Investigators Dr Wenwu Wang and Dr Philip Jackson.

CVSSP is one of the largest groups of its type in the UK, with over 120 active researchers working in the areas of vision, image processing, medical imaging, and audio, and a grant portfolio of over £12M. The Centre has state-of-the-art acoustic capture and analysis facilities enabling research into audio source separation, music transcription and spatial audio, and a Visual Media Lab with video and audio capture facilities supporting research in real-time video and audio processing and visualisation. It has an extensive computing infrastructure for audio-visual processing and storage, comprised over 1,000 processing cores and a recent university investment of 500TB of fast, object based storage.