

Research Role Profile

Job Title:	Research Fellow A
-------------------	-------------------

Responsible to:	Head of research group, or principal investigator
------------------------	---

Responsible for:	Not applicable
-------------------------	----------------

Job Summary and Purpose:
To undertake research in accordance with the specified research project(s) under the supervision of the principal investigator.

Main Responsibilities/Activities
<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

Job Title:	Research Fellow in Machine Learning for Audio Captioning
-------------------	--

<p>Job Summary and Purpose:</p> <p><u>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:</u></p> <ul style="list-style-type: none"> (i) Investigate and develop signal processing and machine learning methods for audio captioning, and natural language description of audio; (ii) Investigate a range of methods for this purpose, such as machine learning, deep learning, feature extraction, audio classification, natural language based automated audio description, the inter-play between audio and image, and the use of complementary information in image to improve machine audio description; (iii) Autonomously undertake the design, development and implementation of novel algorithms for audio captioning and natural language description of audio; (iv) Generate data for audio captioning research including cloud sourcing audio data for captioning, and working with project partners to collect data, when appropriate. (v) Develop software tools demonstrating the capability of advanced signal processing and machine learning (such as deep learning) for audio captioning and natural language description. (vi) Meet on a weekly basis with project staff including collaborators at Izmir Katip Celebi University (IKCU) remotely e.g. via Teams, Zoom or other online tools, and attend project meetings and present results at other sites if necessary, including the project partner IKCU; (vii) Publish and present research in high-quality international journals and conferences. (viii) Pro-actively organise and manage own time and research-related activities. (ix) 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 the project partner. (x) Perform any other duties associated with the project, as deemed appropriate to the grade by the Principal Investigator. (xi) Promote the research and activities of the project and the Centre for Vision, Speech and Signal Processing (CVSSP) in national and international forums.
--

<p>Main Responsibilities/Activities</p> <p>Research in advanced signal processing and machine learning methods for natural language description of audio</p> <p>Meet on a weekly basis on campus with Principal Investigator, or virtually during the Covid-19 lockdown, via online meeting tools, such as Zoom, Skype, or other suitable tools</p> <p>Attend project meetings and present results at other sites as required</p>
--

Research Role Profile

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. Publish papers in high-quality journals and conferences.

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 (such as Covid-19 lockdown) and deadlines and implementing procedures required to ensure accurate and timely delivery.

Person Specification

The post holder must have:

Doctoral level research experience (or equivalent) in electronic engineering, computer science, applied mathematics, statistics, artificial intelligence, audio engineering, 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: audio signal processing; machine learning, deep learning, audio captioning, natural language processing, audio classification, and audio tagging;

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 Wenwu Wang.

Research Role Profile

Additional Background Information

Applications are invited for a Research Fellow (RF) position for 22 months within the Centre for Vision Speech and Signal Processing (CVSSP), University of Surrey, UK, to work on a project titled “Automated Captioning of Image and Audio for Visually and Hearing Impaired”, which is a collaborative project between the University of Surrey and the Izmir Katip Celebi University (IKCU), Turkey, with project partners from charities and industrial sectors working with the hearing and visually impaired. This project aims to address fundamental challenges in audio and image captioning, develop new algorithms to improve performance of audio and image captioning algorithms, and application tools that could be used by the hearing and visually impaired to access audio and image content.

The work at Surrey will focus on new methods and algorithms of automated audio captioning and natural language description of audio. This work is built on the significant contributions of CVSSP in the area of acoustic scene analysis, audio event detection, environmental sound recognition, and audio tagging, together with preliminary results on audio captioning. This new project offers an opportunity to take this work to the next stages, and demonstrate the benefit of such technologies for the hearing and visually impaired. A smartphone based prototype will be developed for audio and visual captioning jointly by Surrey and IKCU. New data will also be gathered, including audio-visual data for captioning, and user feedback for the prototype system.

The postholder will be responsible for investigating and developing audio signal processing, machine learning algorithms for natural language description of sound, and implementing software for prototyping the concept and algorithms. The postholder should have a doctoral level (or equivalent) research and development experience in electronic engineering, applied mathematics, computer science, artificial intelligence, machine learning, natural language processing, or related subjects. The postholder should ideally have experience in one of the following areas: audio captioning, machine description of audio, audio classification, audio tagging, image captioning, video captioning, translations between audio/image and texts, and/or translation between audio and video.

The post-holder will be based in CVSSP, and work under the direction of the Principal Investigator Prof Wenwu Wang, with co-supervision by Prof Sabine Braun, Director of the Centre for Translation Studies, at University of Surrey, and in collaboration with Dr Volkan Kilic, from the IKCU, Turkey.

CVSSP is an International Centre of Excellence for research in Audio-Visual Machine Perception, with over 150 researchers, a grant portfolio of £24M (£17.5M EPSRC) from EPSRC, EU, InnovateUK, charity and industry, and a turnover of £7M/annum. The Centre has state-of-the-art acoustic capture and analysis facilities and a Visual Media Lab with video and audio capture facilities supporting research in real-time video and audio processing and visualisation. CVSSP has a compute facility with 120 GPUs and >1PB of high-speed secure storage.

For informal inquiries, please contact Prof Wenwu Wang (Email: w.wang@surrey.ac.uk; Web: <http://personal.ee.surrey.ac.uk/Personal/W.Wang/>).