

Research Role Profile

Job Title:	Research Fellow A
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Responsible to:	Head of research group, or principal investigator
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Responsible for:	Not applicable
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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>

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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.

Addendum to Role Profile

Job Title:

Research Fellow in Generative AI for Social Music Game Design

Job Summary and Purpose:

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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 generative AI, machine learning and signal processing methods for music audio generation;
- (ii) Investigate the application of the state-of-the-art audio generation models, such as AudioLDM, for music audio generation, including instrument sample generation and style transfer;
- (iii) Autonomously undertake the design, development, implementation and improvement of the generative AI models for social music audio generation, e.g. generating instrument samples based on game player actions, and transfer the style of music sound, e.g. from singing voice to trumpet sounds;
- (iv) Gather additional data for this research, with project partners, when appropriate, and fine-tune the AudioLDM model for social music game scenario.
- (v) Work with the industrial partner and evaluate the audio generation models for audio sample generation in social music games.
- (vi) Meet on a weekly basis with project staff including collaborators from the industrial partner in person or remotely e.g. via Teams, Zoom or other online tools, and attend project meetings and present results to the industrial partner;
- (vii) Publish and present research in high-quality international conferences and journals.
- (viii) Pro-actively organise and manage own time and research-related activities.
- (ix) Report orally and prepare papers reporting progress and delivery of the 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.

Main Responsibilities/Activities

Research in generative AI and machine learning methods for music audio generation.

Perform experimental studies of the generative AI models with the project partner using publicly available data, and the data provided by the project partner.

Meet on a weekly basis on campus with Principal Investigator, or occasionally via online meeting tools, such as Zoom, Skype, or other suitable tools.

Attend project meetings and present results at other sites as required.

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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 conferences and journals.

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:

PhD degree (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, music processing, cross modal (audio, text) processing, machine learning, or a related topic;

Skills and experience in using programming languages, such as Python, C++ and/or MATLAB, with relevant signal processing and/or machine learning toolboxes;

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 generation, text to audio generation, digital music, social music game;

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.

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Additional Background Information

Applications are invited for a Research Fellow (RF) position for 12 months within the Centre for Vision Speech and Signal Processing (CVSSP), University of Surrey, UK, to work on generative AI for social music game design.

The post is funded by Research England and Surrey County Council, under the GAIN program. The project is a collaboration with industry partner Record Games. The focus will be to develop generative machine learning models and signal processing algorithms for music sound generation. This work is built on the recent contributions of the CVSSP audio team in generative AI models for audio generation, such as AudioLDM and AudioLDM2, with a focus on exploring the performance of using such models for music instrument sound generation and style transfer (e.g. from singing voice to trumpet sound).

The post-holder is expected to have a PhD degree (or equivalent) in generative AI, acoustic signal processing, cross-modal processing among audio and text, machine learning, or a related area in electronic engineering, applied mathematics, computer science, and statistics. The post-holder is expected to have strong analytical skills and programming skills such as Python, C/C++, or Matlab. Preference will be given to those who have experience on generative AI models, audio generation, cross modal translations (such as, text to audio), but candidates who have experience in machine learning and audio signal processing are welcome to apply.

The post-holder will be based in CVSSP, and work under the direction of the Principal Investigator Prof Wenwu Wang, in collaboration with the industrial partner.

CVSSP is an International Centre of Excellence for research in Audio-Visual Machine Perception and AI, with over 180 researchers. The Centre has state-of-the-art audio and video capture and analysis facilities supporting research in real-time video and audio processing and visualisation. CVSSP has a compute facility with, 1000 CPUs, 200 GPUs and >2PB of high-speed secure storage.

The University of Surrey is a global university with a world-class research profile and an enterprising spirit, located in one of the safest counties in England, within 35 minutes of London by train and minutes away from the Surrey Hills, an Area of Outstanding Natural Beauty. Recent investments have seen the opening of a world-class Sports Park and important updates to central facilities.

For informal inquiries, please contact Prof Wenwu Wang (Email: w.wang@surrey.ac.uk; Web: <https://personalpages.surrey.ac.uk/w.wang/>).