

**Applications are invited for three fully-funded doctoral research studentships in a new Research Network funded by the White Rose College of the Arts & Humanities.**

*WRoCAH White Rose NETWORK*

**Expressive nonverbal communication in  
ensemble performance**

**About WRoCAH Networks**

WRoCAH White Rose Networks each comprise three PhD studentships. Students will work on one aspect of an over-arching research theme, and will benefit from being part of an integrated community working upon a larger initiative. Each WRoCAH White Rose Networks Studentship has two supervisors – one at the student's home institution and a co-supervisor at one of the other White Rose institutions.

Each university acts as lead on one studentship, and co-supervisor on another so each Network comprises six academics and three PhD researchers with parity of involvement across the three institutions.

Successful students will be expected to participate fully in the Network's activities, working with other PhD researchers exploring the common theme from three different perspectives. Students will also be part of the White Rose College of the Arts & Humanities and have access to the additional funding opportunities membership offers. For more details of these please see <http://wrocah.ac.uk/funding/current-students/>

**About this Network**

Expressive communication refers to the coordination and synchronisation of gestures in movement and sound between musicians performing different parts in a unified manner. This network will investigate the subconscious communicative processes between performers that go beyond what is written in the score, and audience responses to these. Overarching questions are: What is communicated through performance? What processes facilitate synchronisation and coordination? How do experts differ from novices? How is ensemble coordination perceived or experienced? How may this differ between audience and performers? How can our findings benefit education and music technology? These are large questions that cannot be addressed through individual projects. However, this PhD network will allow research students to investigate educationally, psychologically and musically relevant questions related to ensemble performance while assuring that projects remain technically tractable.

The network brings together experts in the expressive performance of music, working at the three universities, who have shared interests but complementary expertise and perspectives on performance. This includes the three first supervisors: Renee Timmers (Sheffield, Network Leader), expert in psychology of music with a specific interest in expressive timing of music and expression and perception of emotion in music. Kia Ng (Leeds), expert in musical computation with a specific interest in the analysis of motion and gesture in music performance and Helena Daffern (York), expert in vocal performance with a specialisation in voice acoustics. The second supervisors bring in addition complementary expertise from psychology (Mitch Waterman, Leeds), computer science and speech processing (Guy Brown, Sheffield), and music performance practices and music philosophy (Catherine Laws, York). This combination of expertise assures the feasibility of the programme, which is technically demanding, its relevance for and impact on music practice and education, as well as communication with the broader communities of psychology, education, music, phonetics and computer science.

Research into music performance has always relied on and benefited from technical innovations. A major boost was given by the rise of MIDI technology allowing detailed recording of timing, dynamics and articulation in MIDI (Musical Instrument Digital Interface) instruments (generally keyboard). The increasing availability of audio analysis tools has opened possibilities to investigate performances from audio recordings paving the way for historical and contemporary databases of recordings to be analyzed with the constraint that different audio sources (e.g. different voices and instruments) cannot be separated. This reliance on technical innovations has however pigeon-holed performance analysis within two categories of academia: a computer-driven approach tackling large data sets using machine-learning techniques and a qualitative and small scale data analysis approach driven by performers and musicologists. This Network will bridge the gap across these disciplines, using digital transformation to fully integrate the approaches from the arts and sciences to provide meaningful research outcomes for theory and practice. Moreover, building on recent innovations, it will push forward the investigation of expressive communication in *ensemble performance* countering the existing focus on either solo performance or the ensemble outcome as a whole.

Through coordinated training and by bringing together expertise, the network will allow students to advance their understanding of ensemble performance in a holistic manner rather than an isolated manner. Through the network they will be able to share data, and have the opportunity to examine the questions and data from different perspectives, bringing awareness of the wider implications. As mentioned, it will allow students to investigate educationally, psychologically and musically relevant questions related to ensemble performance while keeping the technical aspects of the projects manageable. To realise this, the network will operate like a 'distributed lab': It will allow students to share resources, including recorded data, code for data analysis, specialist equipment and space (e.g. the anechoic chamber at York) and to receive assistance and feedback from peers. Additionally, students will receive a broad disciplinary training that combines strengths from the different departments: Knowledge development in psychology of music, music education and practice, singing science, and social and psychological aspects of nonverbal communication will complement training in computational methods. This will be done through reading groups and network meetings.

Strategically the establishment of this network within the White-Rose context of York, Sheffield and Leeds will consolidate these northern universities as an important hub for music psychology, music acoustics and music informatics. Sheffield has the longest established programme in psychology of music of the UK and a large body of postgraduate students in psychology of music. Psychology of music is also a strength of the University of Leeds, alongside music computing. York introduced the first music technology degree in the UK and has bespoke facilities in music performance analysis, including a fully anechoic chamber and Virtual Singing Studio. Both York and Leeds have strong links between the schools of music, and engineering faculty.

### Studentships available

Application Closing Date: **Midnight GMT Friday 22nd May 2015**

Scheduled Interview Date: **Wednesday 3rd June 2015**

University	Studentship Topic	Principal Supervisor	Co-Supervisor
Sheffield	Teaching and learning of ensemble coordination	Dr Renee Timmers Department of Music, Sheffield	Dr Catherine Laws Department of Music, York
York	Achieving excellence in ensemble singing	Dr Helena Daffern Department of Electronics, York	Dr Mitch Waterman School of Psychology, Leeds

Leeds	Movement and sonic gestures in ensemble performance and audience responses.	Dr Kia Ng School of Music, Leeds	Professor Guy Brown Department of Computer Science, Sheffield
-------	---	-------------------------------------	--

**Studentship 1: University of Sheffield**  
***Teaching and learning of ensemble coordination***

How does ensemble coordination develop with growing expertise of ensemble musicians as individuals and as a group? What is the relationship between embodied musical interactions and verbal discussion in rehearsals of ensembles and master classes? How do these lead to enhanced ensemble performance? These questions are addressed through empirical studies of developing instrumental ensembles using systematic observation, interviews, and experimental testing.

Contact: Dr Renee Timmers (r.timmers@sheffield.ac.uk, 0114 2220477)

Note on the interdisciplinary character of the project: All projects require a solid musical background, good computational skills, in addition to academic and theoretical strengths. We acknowledge it may be difficult for one person to combine all these strengths. There is some flexibility for the projects to be tailored towards the strengths of the candidate.

**Studentship 2: University of York**  
***Achieving excellence in ensemble singing***

Focusing on ensemble singing, this project aims to develop a novel and holistic approach to a performance-led issue through the optimized application of existing digital tools. Aspects of singing are analysed that signify excellence in ensemble performance together with an assessment of the methods used in practice to achieve and learn these characteristics.

Contact: Dr Helena Daffern (helena.daffern@york.ac.uk, 01904 322350)

Note on the interdisciplinary character of the project: All projects require a solid musical background, good computational skills, in addition to academic and theoretical strengths. We acknowledge it may be difficult for one person to combine all these strengths. There is some flexibility for the projects to be tailored towards the strengths of the candidate.

**Studentship 3: University of Leeds**  
***Movement and sonic gestures in ensemble performance and audience responses***

This project will apply Computer Vision approaches to track and analyse non-verbal communication (body movements, both conscious and subconscious) between performers in ensemble settings for different musical contexts, such as tempo changes, synchronisation, emotional communication etc., to identify different types of interactions and their impacts on the group. The tools and analyses will also be applied to study engagement of the audiences.

Contact: Dr Kia Ng (k.c.ng@leeds.ac.uk, 0113 343 2572)

Note on the interdisciplinary character of the project: All projects require a solid musical background, good computational skills, in addition to academic and theoretical strengths. We acknowledge it may be difficult for one person to combine all these strengths. There is some flexibility for the projects to be tailored towards the strengths of the candidate.

**For more information on any of these studentships, please contact:**

For general inquiries and for the studentship in Sheffield, please contact Dr Renee Timmers (r.timmers@sheffield.ac.uk, 0114 2220477)

For the studentship in York, please contact Dr Helena Daffern (helena.daffern@york.ac.uk, 01904 322350)

For the studentship in Leeds, please contact Dr Kia Ng (k.c.ng@leeds.ac.uk, 0113 343 2572)

**Applicant Requirements**

Applicants must:

- Have at least a UK Upper Second Class Honours degree or equivalent. A Masters degree is desirable.
- Enthusiasm to participate fully in the network and its activities.
- A desire to engage with and benefit from the full WRoCAH cohort of students from across the three White Rose Universities (c. 80 students) at the same stage in their research, in a shared training and development programme.

**Terms and Conditions**

Each WRoCAH White Rose Networks Studentship is tenable for three years and students are expected to start in October 2015. As the coherence of the network is important, deferrals will not be permitted.

The award will provide fees at the Home/EU rate and a stipend paid at standard Research Council rates (£14,057) for the first year of study. The award is renewable for a second and third year of study subject to satisfactory academic progress.

Successful students will also be eligible to apply to additional WRoCAH funding schemes for research support, training, student-led activities and knowledge exchange projects. All students will be required to spend one month with a Partner organisation on a specific project to develop their employability skills.

If international students are appointed to the project then the following individual University regulations will apply:

- Leeds: If an international candidate is offered a WRoCAH White Rose Networks Studentship, the School would have to pay the difference between the international fee rate and the standard UK/EU fee rate.
- Sheffield: If an international candidate is offered a WRoCAH White Rose Networks Studentship, the candidate/department will be required to pay the difference between the international fee rate and the UK/EU fee rate.
- York: If an international candidate is offered a WRoCAH White Rose Networks Studentship, the department will be required to pay the difference between the international fee rate and the UK/EU fee rate.

Specific enquiries regarding eligibility should be directed to the relevant Scholarships Offices:

Leeds	+44 113 343 4077 pg_scholarships@leeds.ac.uk
Sheffield	+44 114 222 1417 pgr-scholarships@sheffield.ac.uk
York	+44 1904 323374 research-student-admin@york.ac.uk

## How to apply

Application is a TWO-STAGE process.

### STAGE 1

You may not apply for a WRoCAH White Rose Networks Studentship until you have FIRST applied for a place of study at the institution of your choice.

If you have not done this yet, you can do this at the following links:

- Leeds: [http://www.leeds.ac.uk/info/125187/applying\\_for\\_research\\_degrees](http://www.leeds.ac.uk/info/125187/applying_for_research_degrees)
- Sheffield: <https://www.sheffield.ac.uk/postgraduate/research/apply/applying>
- York: <http://www.york.ac.uk/study/postgraduate/apply/>

You may wait up to 48 hours at busy times for applications to be processed and confirmation of your 9-digit student number so make sure you apply for a place of study in plenty of time so you do not miss the studentship application deadline.

### STAGE 2

Only when you have completed Stage 1 can you apply for funding.

The link below will take you to the WRoCAH White Rose Networks Studentship application form:

<http://bit.ly/2015networks>

---

## Application Closing Date: Midnight GMT Friday 22nd May 2015

In the interests of fairness, applications received after this deadline will not be considered.

### For any other enquiries, please contact:

WRoCAH Office  
Tel: +44 (0) 1904 328132  
Email: [networks@wrocah.ac.uk](mailto:networks@wrocah.ac.uk)