JOB DESCRIPTION

Job Title: Research Compute Officer (HPC)

Department: Data Science

Faculty/Professional Service: MRC Unit The Gambia

Location: Fajara, The Gambia

Reports to: Head of Data Science

Responsible for: High Performance Computing (HPC)

Full Time/Part Time/Casual: Part-time

Hours *(if less than full-time):* 0.5 FTE

Grade: Grade 6

Overall Purpose of the Job:

The Research Compute Officer (HPC) will be a member of the Data Science Cluster, which supports and manages MRCG@LSHTM's high-performance computing (HPC) and cloud solutions using Windows and Linux platforms. The role's focus is providing and developing academic research and HPC resources at MRCG@LSHTM. Including but not limited to HPC administration & monitoring, documentation, training, advice and support to users, internal and external liaison on all central research compute matters, developments, and opportunities. The role will provide support in helping researchers adapt code, methodologies and utilities that optimise workloads at scale. MRCG@LSHTM makes predominant use of Python, R, and Java, along with several other specialised tools.

Responsibilities

- Responsible for supporting and developing MRCG@LSHTM's Fajara-based HPC systems, including maintaining and monitoring those systems to provide appropriate, flexible, modern, reliable, and secure services.
- Act as the primary point of contact for all research compute matters as a liaison between researchers, IT, and external parties.
- Provide day-to-day support and guidance to users of the HPC.
- Implement and monitor controls to support data management and security policies. Guide policies where applicable and contribute to policy development.
- Administer job-scheduling and cluster management software, install and maintain an appropriate suite of software packages to fulfil user requirements
- Identify opportunities to improve the efficiency, automation, and functionality of the research computing services. This includes looking at supporting containers like Singularity and cloud-based services like AWS or Azure.
- Support procuring servers, storage, and other hardware for the HPC, research computing service, and potentially broader research projects. Maintain an inventory and manage maintenance contracts and renewal cycles.
- Manage and plan any allocated supporting budget or finances for HPC. Provide input to the main Data Science budget-round planning where

appropriate, ensuring that current and future needs are anticipated and planned for.
- Develop and maintain, in conjunction with IT team members, aspects of HPC that interface and integrate with other main systems, such as authentication mechanisms, storage infrastructure, backup, and networking.
- Form a strong partnership with LSHTM and the other MRC unit's research computing operations.

General Information

The London School of Hygiene & Tropical Medicine (LSHTM) is a leading public health university.

Our mission is to improve health and health equity in the UK and worldwide. We work in partnership to achieve excellence in public and global health research, education, and the translation of knowledge into policy and practice.

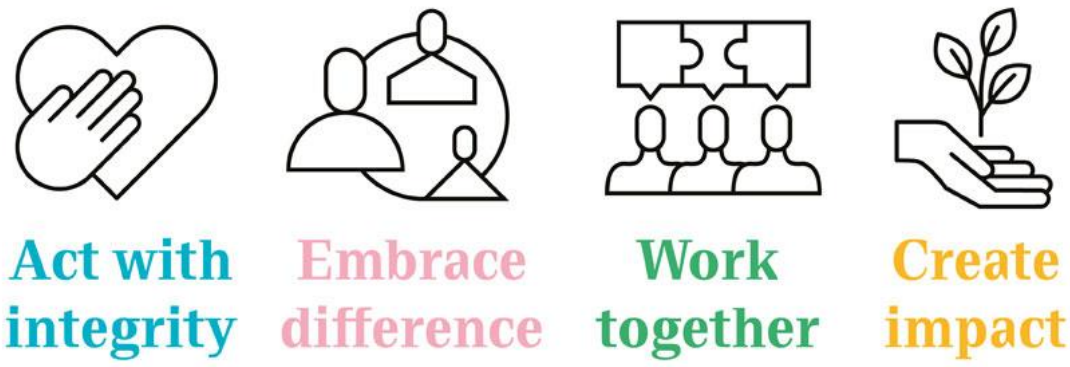
Staff and students are committed to helping create a healthier, sustainable and equitable world for everyone because we believe our shared future depends on our shared health.

We embrace and value the diversity of our staff and student population and seek to promote equity, diversity and inclusion as essential elements in improving health worldwide. We believe that when people feel respected and included, they can be more creative, successful, and happier at work. While we have more work to do, we are committed to building an inclusive workplace, a community that everyone feels a part of, that is safe, respectful, and supportive, and that enables all to reach their full potential.

To find out more, please visit our Introducing LSHTM page.

Our Values

Our values establish how we aspire to achieve our mission both now and in the future - demonstrating what it means to work and study at LSHTM. Please visit our LSHTM Values page for further information.



ABOUT MRC The Gambia at LSHTM (MRCG)

MRC Unit The Gambia (MRCG) at the London School of Hygiene and Tropical Medicine is a leading research centre in sub-Saharan Africa. Research is carried out by three major Research Themes (Disease Control & Elimination, Vaccines & Immunity, and Nutrition & Planetary Health) that benefit from the core-supported strategic platforms and research services. Disease Control & Elimination investigates the interactions between hosts, pathogens, and vectors and evaluates interventions aimed at interrupting transmission and/or reducing the burden of diseases.

Research is multidisciplinary and includes a sizeable epidemiological component complemented by social sciences and combined with solid laboratory and genomics support. Vaccines & Immunity studies the ontogeny of immunity as a baseline to inform the design of vaccines and maximise their impact. It hosts a portfolio of Phase 1-4 clinical trials of existing and novel vaccines and employs cutting-edge system biology methods to understand host responses to infection and vaccination. The Theme also works on tuberculosis by examining host/pathogen interactions in adults and children. Nutrition & Planetary Health aims to understand the pathophysiology of diet-disease interactions to accelerate the development of more effective next-generation community and clinical interventions and to build a major new program in planetary health. Two Cross-Cutting Programs, i.e. Maternal & Neonatal Health and West Africa, involve all Themes, often in synergy, and underpin the Unit's commitment to research to decrease the current high burden of maternal and neonatal mortality in sub-Saharan Africa and the Unit's vocation as a Regional Centre of Excellence for Research and Training. A third cross-cutting Program, Planetary Health, is currently being developed.

Besides the main campus in Fajara, the MRCG has two field stations, Keneba and Basse. The Unit, led by Professor Umberto D'Alessandro, receives an MRC core investment grant every five years following a review of past activities and future plans. In addition, all research activities are supported by external grants from various sources. The Unit has a turnover of more than £22m per annum and employs about 1400 staff.

Main Duties and Responsibilities

Communications

- General communication with members of staff, IT staff, and stakeholders of the HPC systems the role supports.
- Explanation of HPC systems principles and procedures to research and academic staff, IT staff and other MRCG@LSHTM staff in general through presentations and meetings
- Liaison with external contacts on support and development of research compute systems.
- Delivering technical briefings to staff on using and developing the compute systems.
- Delivering formal and informal training to stakeholders of the systems, either on a one-to-one basis or to small groups.
- Email communications and documentation in general
- Technical specification documents, system documentation, change logs, etc.; recorded in standard document format or through web-based collaboration systems as appropriate.
- Maintenance and development of a set or system of user and IT support staff-focused documentation, offering knowledge for reference and other self-help materials.
- Change and system development log maintenance

Teamwork and Motivation

- Develop close working and supportive relationships with researchers, third parties and the wider IT team in relation to the use and development of MRCG@LSHTM's HPC systems.
- Contribute as a member to the Data Science team to the support of systems beyond just that of the research compute regime.
- Provide mentoring and support on research compute to other support areas of Data Science to disseminate knowledge, experience, and skills.
- Liaison with other team members to plan work on day-to-day and project-based initiatives as appropriate, contributing flexibly to the requirements of the role and the goals of the team.

Liaison and Networking

- Liaison with users of the HPC and compute systems, acting as a point of contact on all technical, system, and support matters
- Liaison with vendors and suppliers to act as a point of contact for ongoing work to develop, maintain, and support the research compute systems
- External networking: Regularly participate in and contribute to external networking opportunities (conferences, user groups, seminars, meetings, etc.) to share experience and gather pertinent information and knowledge

Service Delivery

- Act as a primary point of contact internally and externally for research compute systems and associated infrastructure
- Lead the planning and implementation of new or upgraded central research compute services
- System monitoring, diagnosis, and problem resolution
- Regularly assess service performance and capacity as part of a continual service improvement approach to maintenance and upkeep
- Devise bespoke solutions to address business requirements and operational needs, either on a project or demand basis; this is likely to be a continual, regular activity as part of service delivery
- Capture user requirements for changes and enhancements to HPC systems or infrastructure. Understanding the users' needs is key to delivering a tailored and efficient solution.

Decision Making

- Contribute to the data science team's strategic and resource planning
- Form decisions about future HPC and compute developments and direction, especially regarding expansion of usage/engagement or technology direction of research compute over time
- Decide upon, plan and action regular maintenance of the HPC systems
- In collaboration with other members of the team, give input to regimes for patching and upgrades to the HPC and other systems.
- Write reports and/or participate in meeting schedules to provide input to the decision-making process that will affect future developments to all research compute systems aspects and their potential interconnection with other systems
- Troubleshooting issues by isolating the root issues and implement solutions to remedy identified issues

Planning and Organising

- On a day-to-day basis organise one's own work regime, planning time to achieve objectives in a timely and agreed manner
- Work on assigned tasks that are delegated to the role from the Head of Data Science, and/or other senior members of the Data Science management team.
- In conjunction with support from the Data Science Admin Manager, plan and manage and/or contribute to projects relating to the development of HPC systems and infrastructure. Acting as the local project manager for these activities you will assess the business case for change and plan the project according to established principles and guidelines; this requires proper use of documentation and communications frameworks, the effective use of resources available and the monitoring of progress.
- Work with stakeholders that have invested in the research compute systems in order to help form decisions about their future development and direction, especially in terms of current and future perceived requirements, capacity, and scope.
- In the light of the above decide upon the planned future technical development of the research compute and HPC system where applicable.

Initiative and Problem Solving

- The role requires that problem-solving, as well as general support is a core component of the role to support core systems and their infrastructure. This would manifest itself on a day-to-day basis with general administrative tasks and the decisions to be made as and when to apply solutions.
- A key area of the role is to capture user requirements and analyse these in order to formulate and influence future developments and contribute to strategy planning relating to research compute systems and infrastructure. This may involve not only information gathering, but analysis of the operational & business processes, perhaps using data modelling techniques and workflow analysis
- The role would also be expected to originate and contribute to technical innovations that could be applied to our other Data Science systems and services, beyond just the research compute
- Maintenance and development of test and development environments for the supported research compute systems, as applicable and appropriate

Analysis and Research

- Capturing and assessing user requirements and (business/operational) processes; analysis of these to formulate pertinent solutions
- Analysis of complex business and technical processes, to assess problems and provide efficiencies
- Capturing user requirements and analysis of these to formulate and influence future developments and strategy
- Devise how the analysis of business requirements, problems and processes is approached, potentially each new scenario may require a bespoke way of looking at or gathering information; the use of prescribed formal analysis and/or data modelling techniques may not be enough or suitable for all situations

Sensory and Physical demands

- Use of computer equipment
- Hardware and network installation and wiring
- Moving of computer hardware

Work Environment

- Flexible working remotely and hot desking within an office environment at one of MRCG@LSHTM's sites

Pastoral Care and Welfare

- Mutual support of colleagues

Team Development

- The role holder will be expected to initiate and participate in team training opportunities and knowledge transfer activities within the team and wider within Data Science and extend to service users and stakeholders. This may be in small groups or one-to-one
- Given the systems' complex technical nature, the role holder is responsible for cross-skilling colleagues via a longer-term mentoring approach. This can be applicable within the team or wider IT Services teams or externally with key service contacts within the LSHTM academic community

Teaching and Learning Support

- Indirectly via support of research compute systems that may support teaching and learning services
- Provide various levels of training in the use of HPC services. This will be either one-to-one or in a classroom setting. Delivered to researchers and students that will be using those services

Generic duties and responsibilities of all LSHTM employees

This job description reflects the present requirements of the post but may be altered at any time in the future as duties and responsibilities change and/or develop, provided the post-holder is consulted.

The post-holder will carry out any other duties, tasks or responsibilities as reasonably requested by the line manager, Dean of Faculty, Head of Department or Head of Professional Service.

The post holder will be responsible and accountable for ensuring compliance with all LSHTM policies, procedures, regulations, and employment legislative requirements, including equality, diversity, and health and safety.

This job description is not a definitive or exhaustive list of responsibilities but identifies the key responsibilities and tasks of the post holder. The specific objectives of the post holder will be subject to review as part of the individual Performance and Development Review (PDR).

PERSON SPECIFICATION

This form lists the essential and desirable requirements for the post holder to perform the job effectively.

Applicants will be shortlisted solely on the extent to which they meet these requirements.

Competency	Evidence	E/D
Education, Qualifications and Training	• Hold relevant professional qualifications or equivalent experience • Hold an undergraduate degree or equivalent • Hold relevant vendor or industry certification	E D D
Experience	• Experience in research compute, HPC and IT systems deployed in HE, FE, research institutions or similar • Working with HPC cluster management and scheduling systems • Experience in deploying and supporting server technologies and hardware (Linux, Windows server) in a production environment • Automation of process using scripting or tooling (salt, PowerShell, python or equivalent) • Use of containerization for HPC workloads (Singularity or similar) • Use of cloud platforms, like AWS or Azure, for running compute workloads • Use of VMware (or other virtualisation) platforms • Working with third-party support, defining, and overseeing work	E E E D D D D E
Knowledge	• Good working knowledge of systems management of Linux and Windows systems • Working knowledge of research compute, including HPC, management and scheduling and access frameworks • Working knowledge of programming methodologies and concepts relating to running research workloads at scale. • Understanding of cluster storage systems (SANS/NAS/Filer/Ceph) and shared access methods (iSCSI/Fibre block, NFS, SMB, Ceph) • Understanding of hardware and procurement processes within a data centre environment • Knowledge of installation and maintenance of server, storage, and associated hardware • Up-to-date knowledge of industry sources for security recommendations and best practices • Working knowledge of data management techniques and securing access to data across systems.	E E D D D D D D
General	• Excellent interpersonal skills, including the ability to establish effective working relationships with staff and students from a wide variety of backgrounds; the ability to communicate technical issues to non-technical users effectively • A focus on results – consistent delivery of projects on time and to specification • Confidence in operating in an environment of change with the ability to use change management models/frameworks • A high degree of personal motivation, including the ability to work independently and organise priorities	E D E E

	• The ability to think conceptually, demonstrating creativity and innovation • The ability to look continuously for opportunities for improvement and to develop existing systems or identify new systems • The ability to work in an equitable, diverse and inclusive environment	E D E

E-Essential: Requirement without which the job could not be done
D-Desirable: Requirements that would enable the candidate to perform the job well

Date compiled: November 2024

Salary and Conditions of Appointment

The post is fixed term until 31 March 2027 and part-time, 17.5 hours per week (0.5 FTE). It is funded by MRCG@LSHTM core funding and is available immediately. The salary will be on the Professional Services salary scale, Grade 6 scale, in the range of £44,847 to £50,808 per annum pro rata.

The post will be subject to the LSHTM terms and conditions of service. Annual leave entitlement is 30 working days per year, pro rata for part-time staff. In addition to this, there are discretionary “Wellbeing Days.” Membership of the Pension Scheme is available.

LSHTM has a Hybrid Working Framework, which, alongside agreed service requirements, enables teams to work more flexibly (if the role allows), promoting greater well-being and work/life balance.

Application Process

Applications should be made online via our jobs website. They should also include the names and email contacts of 2 referees who can be contacted immediately if appointed. The automated system will accept online applications until 10 p.m. of the closing date. We regret that late applications cannot be accepted. Any queries regarding the application process may be addressed to jobs@lshtm.ac.uk.

The supporting statement section should indicate how your qualifications, experience and training meet each selection criteria. Please provide one or more paragraphs addressing each criterion. The supporting statement is an essential part of the selection process; thus, failing to provide this information will mean that the application will not be considered. An answer to any of the criteria, such as "Please see attached CV”, “Yes”, or “No", will not be considered acceptable and will not be scored.

Please note that if you are shortlisted and cannot attend the interview, we may not be able to offer you an alternative date.

Asylum and Immigration Statement

This post is based overseas, and candidates will be required to email a copy of their passport (and visa if applicable) to HR prior to their interview and, if appointed, will be asked to send a notarised copy of their passport prior to their start date.

Applicants will be required to have the right to work in the country where the post is based (or to be eligible to apply for a suitable work visa).