UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Techno-Economic Modelling for Sustainable Protein Production, School of Food Science and Nutrition

Salary: Grade 7 (£41,064 - £48,822 p.a. depending on experience)

Reference: ENVFS1150

Fixed term for 2 years from 1st January 2026 to complete specific time limited work.

We are open to discussing flexible working arrangements

Research Fellow in Techno-Economic Modelling for Sustainable Protein Production, School of Food Science and Nutrition

Overview of the Role

Are you an ambitious researcher looking for your next challenge? Do you have an established background in techno-economic modelling in food or bioprocesses? Do you want to play a leading role in developing an AI platform to valorise agri-food waste-streams and improve protein security?

We are looking for a Research Fellow in Techno-Economic Modelling for Sustainable Protein Production to join our international and interdisciplinary team developing an open-source AI platform for microbial protein from agri-food waste-streams, which has recently been awarded £2M from the Bezos Earth Fund as part of their AI for Nature and Climate Grand Challenge.

Nearly 29% of the world's population faces food insecurity, yet millions of tonnes of nutrient-rich agri-food waste is generated globally each day. This waste can be upcycled into sustainable, high-quality microbial protein (e.g. yeast, fungi, bacteria and algae) via fermentation for use as ingredients in existing foods or to produce novel meat and dairy alternatives. However, microbial fermentation processes are difficult to design, optimise and scale up, especially for complex, and highly variable waste streams. This limits their investment attractiveness and economic viability, especially for small and medium enterprises (SMEs), and ultimately their global adoption.

The University of Leeds in collaboration with the Commonwealth Science and Innovation Research Organisation (Commonwealth Scientific and Industrial Research Organisation, Australian Government - CSIRO) in Australia will develop the world's first open-access AI platform to address these challenges by streamlining the development of microbial protein production processes. Leveraging advances in modern AI, the platform will consist of a Waste to Protein AI Engine coupled with an adaptive user interface enabling users to input their waste composition, volume, and location and immediately receive actionable insights, such as optimised fermentation parameters, microbial strain recommendations, projected protein yields and economic returns. Our AI platform will also provide users with an R&D roadmap that recommends critical trials to perform during process development and scale-up to reduce experimentation needs and provide partnership recommendations for areas where they lack expertise, facilities or market access.



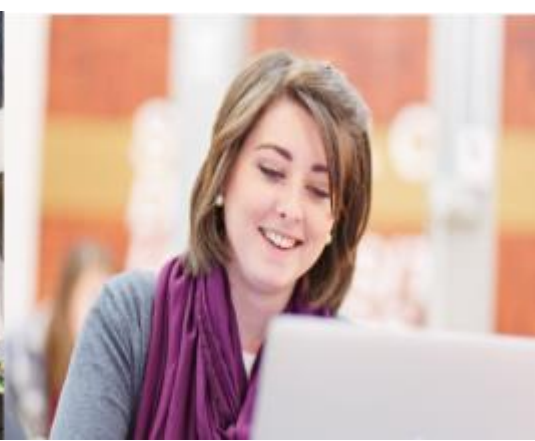
You will be based in the Food AI Lab (www.foodailab.co.uk) in the School of Food Science and Nutrition and benefit from engaging with the growing AI, Alternative Protein and Food activities at the University of Leeds including the National Alternative Protein Innovation Centre (National Alternative Protein Innovation Centre (NAPIC) - NAPIC) the Leeds Institute for Data Analytics Food Community (LIDA: Food | Leeds Institute for Data Analytics) and the Global Food and Environmental Institute (Global Food and Environment Institute | University of Leeds). You will also benefit from collaborating with CSIRO and numerous industry partners in the UK and across the globe.

You will have a PhD (or near to completion) in Engineering, Food Science, Computer Science or a closely allied discipline; a background in techno-economic modelling and research experience in food or bioprocess design. You will have a proven ability to work well both individually and in a team, including partners from other countries, disciplines and industry.

Main duties and responsibilities

- Working closely with the Artificial Intelligence for Sustainable Food Research Fellow to develop techno-economic models for the upyclying of agri-food waste streams to microbial protein via fermentation processes;
- Generating and pursuing independent and original research ideas in collaboration with other members of the Food AI Lab;
- Evaluating methods and techniques used and results obtained by other researchers and partners within the project and to relate such evaluations appropriately to your own work;
- Preparing papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible and attending project meetings and events;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project and your expertise:





These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

Qualifications and skills

Essential

- A PhD or near completion, i.e. the initial thesis needs to have been handed in at the point of application in Engineering, Food Science, Computer Science or a closely allied discipline;
- A background in techno-economic modelling;
- Research experience in food or bioprocess design;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- A developing track record of peer reviewed publications in international journals;
- Excellent written and verbal communication skills including presentation skills;
- A proven ability to work well both individually and in a team, including partners from other countries, disciplines and industry.
- A strong commitment to your own continuous professional development.

Desirable

- Experience of modelling microbial fermentation or waste valorisation processes
- Experience in Life Cycle Assessment
- Experience in digital technologies (e.g. artificial intelligence, machine learning, sensing, internet of things)

Additional information

Please note: If you are not a British or Irish citizen, from 1 January 2021 you will require permission to work in the UK. This will normally be in the form of a visa but, if you are an EEA/Swiss citizen and resident in the UK before 31 December 2020, this may be your passport or status under the EU Settlement Scheme.



Please note that this post may be suitable for sponsorship under the Skilled Worker visa route but first-time applicants might need to qualify for salary concessions. For more information please visit: www.gov.uk/skilled-worker-visa

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information please visit: https://www.gov.uk/global-talent

Find out more about the School of Food Science and Nutrition (School of Food Science and Nutrition | University of Leeds)

Find out more about the Food AI Lab (Food AI Lab -)

Find out more about Equality in the Faculty

Working at Leeds

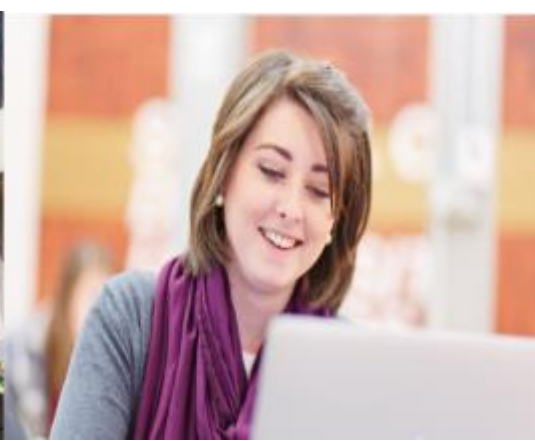
We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our Working at Leeds information page.

Our University

As an international research-intensive university, we welcome students and staff from all walks of life. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the School of Food Science & Nutrition we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian, those who belong to a minority ethnic community; people who identify as LGBT+; and disabled people. Candidates will always be selected based on merit and ability.

The Faculty of Environment has received a prestigious Athena SWAN silver award from Advance HE, the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the Faculty and





shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.

Information for disabled candidates

Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found under the 'Accessibility' heading on our How to Apply information page or by getting in touch by emailing HR via hr@leeds.ac.uk.

Criminal record information

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our Criminal Records information page.