

SEPnet Paid
Summer Placement
Opportunities 2024
PhD

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Introduction and Contacts

Dear SEPnet Student,

We are delighted to be able to present the opportunities available for SEPnet work placements for physics and maths students. Please read through the list of projects carefully – they offer a great opportunity for you to gain valuable work experience this summer.

These projects are only open to some students and contain confidential information.

Please do NOT circulate this document to anyone else.

Details about the scheme are set out in the FAQs section below. Please make a note of the deadline dates, in particular, the application deadline of Friday 31 March.

If you have any questions, contact your Employer Engagement Adviser (EEA).

Details of your EEA at your university:

University of Southampton:	Sue Berger	sepnet_southampton@soton.ac.uk
RHUL:	Jana Checkley	jana.checkley@rhul.ac.uk
QMUL:	Amy Carroll	amy.carroll@qmul.ac.uk
University of Hertfordshire:	Janice Hart	j.hart@herts.ac.uk
University of Portsmouth:	Melvyn Vopson	melvin.vopson@port.ac.uk
University of Sussex:	Emma Hallatt	e.r.hallatt@sussex.ac.uk

FAQ's: What You Need to Know

How much and when will I get paid?

Successful candidates will receive a minimum payment of £3,203 gross which is for eight weeks work in the summer holidays. If you are employed by the organisation you may be paid at the end of the month. If you receive payment via bursary via your home university you will be made aware of when this bursary payment will be made (likely to be in two stages). If you need payment early to cover expenses, let your host organisation know or contact your EEA for advice.

How does the scheme work?

1. You need to register your details before you start applying. Click on the link here to register:

Undergraduates to register using this link:

<https://www.smartsurvey.co.uk/s/StudentRegistrationUG2024/>

PhD students to register using this link:

<https://www.smartsurvey.co.uk/s/StudentRegistrationPhD2024/>

NB: You will not be able to take up a placement if you have not registered here.

2. Read the project descriptions in this booklet carefully. We recommend you apply for more than one placement and you may wish to apply for several but remember to target your applications to the projects that really interest you. Some placements may be located further afield. You should not let this put you off applying as you may lose out on a valuable opportunity. However you should make sure you can get there or be prepared to find accommodation nearby.
3. Visit your Careers Service for advice on your CV, covering email and preparing for an interview.
4. Send a copy of your generic CV to your EEA for their records.
5. Apply directly to the contact given for each placement that interests you **by the 31st March at the latest** with a brief tailored covering letter and CV. Send these as a PDF with the company and your name e.g. Company_Surname_CV.pdf and Company_Surname_CL.pdf. Remember to be clear which placement you are applying for (in case there is more than one). It is better to apply early so your application stands out and to show you are keen. **Please note that many employers will start shortlisting and may recruit before the deadline!**

The covering letter should explain why you have chosen that placement, why you feel you are suitable for the role and when you are available for interview and work. Make sure your CV fits with what the employer is looking for. **Remember to include details of courses you have taken (avoiding abbreviations and highlight any good grades).**

6. Each organisation has its own recruitment process. Some may invite you to interview, some may ask you for a telephone interview, some may select on the basis of CV alone.
7. Organisations should contact you **by the end of April** to let you know if you have been successful. **It is perfectly acceptable to contact an employer if you have not heard back from them.** If you are offered and accept a placement, you should honour this commitment and not change your mind at a later stage without good reason. If you have more than one offer and are unsure of what to do, contact your EEA for advice.

NB: YOU SHOULD ONLY ACCEPT ONE PLACEMENT AND CARRY OUT ONE SEPNET SUMMER PLACEMENT PER YEAR.

8. Please see above regarding payment of a bursary. If you do not receive your payment, contact your EEA for advice. If you do not receive salary payment by your host organisation you should speak 1st with your placement host/supervisor.

Who is eligible?

You are eligible for the scheme if you are a physics or maths undergraduate in your 2nd or 3rd year and Masters students. 1st year students at some universities are also eligible (check with your EEA). SEPnet physics PhD students are also eligible to apply for some placements.

I am an international student – am I able to take part?

Yes! While certain organisations can only offer places to British Nationals, the majority of placements are open to all. The project descriptions should state the cases where there are specific requirements. If you are uncertain of your status, check with your Student Services.

What financial help is available?

The university or employer provides a payment of a minimum of £3,203 gross for eight weeks. This is intended to cover all your expenses over that time. Regrettably we **cannot** offer reimbursement for the following:

- Travel to interview (however it's worth asking your host company because some organisations may pay interview expenses).
- Accommodation expenses (your payment should help to cover these costs).

If you are paid monthly in arrears by your host organisation, you may be able to receive an advance payment to help cover accommodation costs. Ask your host supervisor or your EEA.

What are the deadlines?

You need to complete and submit all of your applications by midnight **31st March**. You may then be called to interview or have a telephone interview. If you have been successful in securing a placement, you should find out by the **end of April**.

How do I find out further information?

If you have any enquiries contact your EEA or email summerplacements@sepnet.ac.uk

Is there help with finding accommodation?

Some placements will require you to find temporary accommodation. Ask your host organisation for advice on finding accommodation and transport. You can also register with <https://www.unihomes.co.uk/> or <https://www.spareroom.co.uk/>. StuRents advertises properties in several regions throughout the UK (<https://sturents.com/>) and lists a wide range of summer lets. It also has a live support service during the day to help students find short-term accommodation over the summer period. Contact summerplacements@sepnet.ac.uk if you want to be put in touch with other current or previous placement students.

SEPnet summer placement timeline

- **Friday 1st March**

Projects are advertised by SEPnet Employability Advisers (EEAs) to students via email and other departmental communications.

- **Mid-March**

Employers provide feedback on the number and quality of applications.

- **Sunday 31st March**

Closing date for applications.

- **1 – 30 April**

Employers select and interview candidates. Unfilled placements are re-advertised.

- **Early May**

Deadline for positions to be filled. Employers inform SEPnet and successful and unsuccessful candidates..

- **June - September**

Students carry out placements. Students prepare posters for Students' Expo. Placement visits or Teams call with students and supervisors take place mid-way through the placement.

- **November**

Students and supervisors participate in the SEPnet Students' Expo.

Placements

Aquark Technologies - Programming Cold Atom Quantum Technology

Laser and Quantum Technology | Hampshire | On-Site Working

Your Contact

Chester Camm

Telephone number: +44 1794 878 022

Email: c.camm@aquarktechnologies.com

Organisation address

Aquark Technologies, Unit 2 Basepoint, Premier Way, Abbey Park Industrial Estate, Romsey, SO51 9AQ

Start and End Date

June/July- Aug/Sept (flexible)

Working Arrangements

In office preferred, hybrid possible

Company Description

Aquark Technologies, a start up from the University of Southampton, is working on miniaturising cold atom quantum technology for use outside of the lab. Current systems use atoms at microkelvin temperatures to make extremely precise measurements of time, gravity, accelerations, magnetic and electric fields, but are fragile, large, and power hungry, limiting the number of applications. Aquark Technologies is tackling some of the biggest challenges in miniaturising cold atom systems by solving vacuum, light, electronics and physics problems.

Project Title

Manipulating laser frequency through computer controlling a phase locked loop for cold atom quantum technology applications

Project Brief /Job Description

Precise laser frequency manipulation is critical to interacting with atomic transitions – the mechanism we use to observe quantum dynamics. We achieve this with electronic feedback loops that allow us to carefully control and stabilise the laser's frequency. A key part of this

system is a phase locked loop (PLL), which needs to be programmed via a serial communication protocol. The commands to send need to be calculated on the fly and communicate with the PLL. We propose that python software is developed to solve this

Student Specification

Strong coding experience (C & Python preferred)

Able to work independently

An interest in electronics/quantum technology/laser physics

Centronic Ltd - Technical Engineer

Data Science and Analytics, Manufacturing | London | On-site Working

Your Contact

Name: Michael Hodgson

Telephone number: 01689 808 020

Email: mhodgson@centronic.co.uk

Organisation address

Centronic Limited, 267 King Henry's Drive, New Addington, Croydon, CR9

0BG

Informal assistance with accommodation or transport will be dependent on the location of the applicant.

Start and End Date

Flexible, ideally start on or before 24th June 2024. Finish flexible ideally on or before 23-August-2024.

Subject to funding, there may be provision to extend placement

Working Arrangements

May be subject to project, but typically on-site

Company Description

Centronic is a leading manufacturer of detectors based in Croydon, UK. It manufactures gas-filled radiation detectors, silicon photodiodes, Geiger-Muller tubes, coil wound components and precision engineered items. Serving customers worldwide, applications for Centronic's products are as diverse as industrial control, non-invasive medical examination, research and satellite navigation, as well as one of its core businesses, the nuclear industry.

Project Title

Technical Engineer

Project Brief /Job Description

Centronic carefully selects each project to suit the specific capabilities and, where possible, interests of each placement student. Each project is important to the business by: making improvements in how we work; acquiring new data on how our products operate; or by supporting developments into new products.

Previous projects have included: developing and testing methods on how to make our manufacturing processes more efficient; demonstrating new performance data for our products; utilising sensors and coding to monitor and improve our manufacturing; fully characterising our testing facilities to support the introduction of new products. This year we are planning similar practical, hands-on projects to make use of the suitable candidate's technical knowledge.

Our placement program ensures that each placement student receives an overview of our products and industry; experience with hands-on testing and data analysis; the chance to show their work in a presentation, report and poster format.

Student Specification

Students with experience of detection, sensors or radiation would be preferred but it is not necessary.

A practical or experimental background would be beneficial for the projects but is not required.

Knowledge of handling and displaying data would assist the role.

The Collinson Group - Forecasting Customer Traffic

Finance, Data Science and Analytics | London | Remote Working

Your Contact

Name: Godfrey Leung

Telephone number: +44 (0) 7415688162

Email: godfrey.leung@collinsongroup.com

Organisation address

The Collinson Group Limited, 3 More London Riverside, London, SE1 2AQ, United Kingdom

+44 (0) 203 725 0000

Start and End Date

Flexible (Start and finish between June and Sept 8 weeks).

Working Arrangements

Fully Remote or Hybrid 2 or 3 days in London Office

Company Description

Collinson is the global, privately-owned company dedicated to helping the world to travel with ease and confidence.

We use our expertise and products to craft customer experiences which enable some of the world's best known brands to acquire, engage and retain the most demanding and choice-rich customers. In particular, our unique expertise and insight into high earning, frequent travellers allows us to create products and solutions for our clients that inspire greater customer engagement to drive more profitable relationships, enrich their travel experiences, protect what matters and assist in times of need.

While specialising in Financial Services, Travel and Retail, we also support clients in multiple sectors. We have worked with over 90 airlines, 20 hotel groups and more than 600 financial institutions and banks, with clients including Accor Hotels, Air France KLM, American Express, British Airways, Cathay Pacific, Diners Club, Mastercard, Radisson Hotel Group and Visa.

Collinson is a privately-owned entrepreneurial business with 2,000 passionate people working in 20 locations worldwide. Our solutions include Priority Pass, the world's best known airport experiences programme, while we are also the trusted partner behind many of the leading financial services, airline and hotel brand's reward programmes and loyalty initiatives.

Project Title

Using machine learning approaches together with company proprietary data and external data to forecast customer traffic

Project Brief /Job Description

This project centres around developing statistical and/or machine learning approaches together with company own proprietary data and external data sources to forecast customer traffic and demand at different places across the globe at different times and periods in the foreseeable future.

The selected candidate will actively engage with our team of experts to design, develop and evaluate proof-of-concept time-series forecasting models, leveraging statistical and machine learning techniques. These include problem definition, data acquisition, data exploration and visualisation, hypothesis testing and experimenting with algorithms.

Day to Day Activities will include:

- Develop proof-of-concept projects
- Exploring customer, transactional, pricing, text based data
- Assist in developing models to forecast demand or customer traffic using machine learning or statistical methods

In this role, the selected candidate will have the opportunity to delve into the nuances of the commonly used machine learning and time-series forecasting algorithms in a practical research context. As they work on real-world projects, they will have opportunities to enhance their data engineering, data science and software development skills, leveraging Python libraries and Jupyter notebooks.

Student Specification

Core Skills

- Good mathematical and statistical knowledge
- Programming experience

Desirable Skills and experience

- Data Science and Engineering
- Good communication and team working skills
- Jupyter notebooks
- Python
- Data analysis
- Machine learning
- Previous experience in time-series forecasting

Environment Agency - Machine Learning based Hydrological Modelling of River Flows

Data Science and Analytics | Bristol | Remote Working

Your Contact

Name: Jonny Wilson

Telephone number: 07769241430

Email: jonny.wilson@environment-agency.gov.uk

Organisation address

Environment Agency

Horizon House, Deanery Road, Bristol BS1 5AH

Start and End Date

01/07/2023- 30/09/2023 (8 weeks approximate and/or flexible)

Working Arrangements

Remote with some scope for office work depending on location

Company Description

Environment Agency – National Appraisal Unit

The Environment Agency aims to protect and improve the environment. One of our main responsibilities is regulating water resources, ensuring that water companies have robust plans in place for achieving a secure supply of water for their customers and a protected and enhanced environment. One of the ways in which water companies can ensure a secure supply for customers is to build new supply options such as reservoirs, water reuse plants and water transfers.

The National Appraisal Unit is a team of technical water resources and environmental specialists that oversee the assessments of major new water supply options and provide timely, consistent, and robust evidence to the Government. An important part of our work involves water resources modelling. We use a national scale system simulation water resources model (physics driven model) to investigate the benefits and reliability of major new water supply options across a range of possible future scenarios. Our modelling explores the performance of water supply options under different scenarios of water availability (climate change and plausible droughts) and demand (population growth, water use, level of environmental protection).

Project Title

Uncovering the potential of Machine Learning based hydrological modelling of river flows.

Project Brief /Job Description

The Environment Agency uses a national water resources model to explore the benefits, trade-offs and risks associated with new large-scale strategic water supply options that are planned to be construction ready by 2025-30. The modelling forms part of the evidence that ensures the most resilient, high-quality, environmentally beneficial, and affordable

strategic solutions are developed.

Our national water resources model solves a mass balance optimisation problem between water availability (from rivers, reservoirs, and groundwater) and water demand. One of the most important inputs for the water resources model are the river flows. River abstractions provide most of the water supply in England and information on low/high flows underpins environmental management. It is therefore important that simulated river flows can accurately represent the complex drivers of catchment behaviour, such as space and time varying climate.

We currently simulate river flows using a physics-based hydrological model that describes how rainfall is converted into runoff in a drainage basin. However, this model is time-intensive to run and requires domain knowledge of hydrology. Recent advances in machine learning based modelling approaches have shown promising results in the hydrological sciences, especially in flood prediction and the ability to learn long-term dependencies, such as water storage effects. This project aims to explore the suitability of machine learning approaches, identifying where they can outperform traditional hydrological models, with a focus on predicting low flows (drought), which are particularly important for water resources modelling.

Student Specification

- PhD student from a technical/applied degree subject
- Strong analytical and problem solving skills
- High degree of programming skills (Python or R,)
- Good understanding of machine learning and data-driven modelling approaches (e.g. neural networks)
- Experience working with geospatial data and/or time series
- Interested in machine learning applications in the environmental sciences
- Domain knowledge of hydrology or climatology is a bonus
- Enjoy working as part of a team
- Strong independent learning and self-starting skills
- Ability to understand and communicate complex technical concepts to different audiences, both verbally and in written reports

Environment Agency - Optimising a Water Resources Model

Data Science and Analytics | Bristol | Remote Working

Your Contact

Name: Dr Emily Fallon

Telephone number: 07880 410341

Email: emily.fallon@environment-agency.gov.uk

Organisation address

Environment Agency, Horizon House, Deanery Road, Bristol BS1 5AH

Start and End Date

01/07/2023- 30/09/2023 (8 weeks approximate and/or flexible)

Working Arrangements

Remote with some scope for office work depending on location

Company Description

Environment Agency – National Appraisal Unit

The Environment Agency aims to protect and improve the environment. One of our main responsibilities is regulating water resources, ensuring that water companies have robust plans in place for achieving a secure supply of water for their customers and a protected and enhanced environment. One of the ways in which water companies can ensure a secure supply for customers is to build new supply options such as reservoirs, water reuse plants and water transfers.

The National Appraisal Unit is a team of technical water resources and environmental specialists that oversee the assessments of major new water supply options and provide timely, consistent, and robust evidence to the Government. An important part of our work involves water resources modelling. We use both a national scale system simulation water resources model (physics driven model) and aggregate supply demand balance models to assess future national water needs as part of the National Framework as well as investigate the benefits and reliability of major new water supply options across a range of possible future scenarios. Our modelling explores the uncertainty around future water needs and the performance of water supply options under different scenarios of water availability (climate change and plausible droughts) and demand (population growth, water use, level of environmental protection).

Project Title

Optimising a water resources model to support the development of national infrastructure

Project Brief /Job Description

The Environment Agency develops and uses a series of national water resources models to evaluate national water resource deficits (and the uncertainty) our country faces in the future as well as explore the benefits, trade-offs and risks associated with potential new infrastructure to resolve those deficits. The modelling helps assess the national water needs and frames the planning problem for water companies and regional groups as well as forming part of the evidence that ensures the most resilient, high-quality, environmentally beneficial, and cost-effective strategic solutions are developed.

There are 105 WRZs in England, a WRZ is a geographical area of a water company where customers experience the same risk of failure of supply (e.g. a hose pipe ban). Water companies use WRZs as a spatial unit for planning and developing forecasts of supply and demand. The EA has worked with the University of Manchester to develop a WRZ scale model that balances supply against demand to predict deficits (not enough water) and surpluses (extra water) under a range of future scenarios. This model has optimisation capabilities to identify the best value combination of new water transfers and local water supply options for resolving national public water supply needs (deficits) under a range of different future scenarios.

This project aims to further develop and optimise this water resources model that can be used as an effective decision-making tool. You will assist academics/consultants as well as having the opportunity to work independently on the development of this model. The aim is to build further optimising criteria into the model (including but not limited to environmental benefit), run and validate the model with new data before using it to explore significant national infrastructure in order to resolve national water resource issues.

The structure of the placement may vary depending on your technical strengths and interests. You will have an opportunity to make a significant real-world contribution to a national problem and work with a bright and creative team within the Environment Agency as well as academic research groups at the University of Manchester

Student Specification

- PhD Student from a technical/applied degree subject
- Strong analytical and problem solving skills
- High degree of programming skills (Python, R)
- Motivated self-starter/self-learner with strong independent learning skills
- High level of numeracy with strong data processing/manipulation skills
- Interest in research software development and models related to environment and water sciences
- Interest in multi-objective optimisation evolutionary optimisation/optimisation algorithms
- Knowledge of hydrology, water resources is a bonus
- Enjoy working as part of a team
- Ability to understand and communicate complex technical concepts to different audiences, both verbally and in written reports

Fat Fish Digital - AI Integrations into Client Projects

Data Science and Analytics | Brighton | Remote Working

Your Contact

David Lane Telephone: 07751531074

Email: david@fatfishdigital.co.uk

Organisation address

Sussex Innovation Centre, BN1 9SB

Start and End Date

June-Aug (Flexible)

Working Arrangements

Remote/Hybrid

Company Description

Fat Fish Digital is a digital agency specialising in creating innovative solutions for the health, wellbeing and sports sectors. Our mission is to improve people's lives by leveraging cutting-edge technology and user-centred design. With a strong focus on creating meaningful and impactful products, we are dedicated to delivering high-quality software solutions that address the unique needs of our clients and their users.

Project Title

AI integrations into client projects

Project Brief /Job Description

We are seeking a dedicated and innovative student to lead the integration of Artificial Intelligence (AI) technologies into our diverse client projects. This role involves collaborating with a cross-disciplinary team to develop and implement AI solutions that enhance our clients' business processes, products, and services. Key Responsibilities: Assess client needs and identify opportunities for AI integration. Develop, test, and deploy AI models tailored to specific client projects. Collaborate with software engineers, data scientists, and project managers to ensure seamless integration of AI solutions. Provide expertise in AI and machine learning to guide project direction. Continuously research and stay updated on emerging AI trends and technologies. Skills and Qualifications: Strong experience in AI and machine learning, with a focus on practical applications. Proficiency in programming languages such as Python, R, or Java. Excellent problem-solving skills and ability to work in a team. Strong communication skills to effectively liaise with clients and team members.

Student Specification

The ideal candidate is passionate about tech and keen to learn, they should also possess excellent communication skills. You should be a smart self-starter with strong communication skills interested in the digital space (and in particular health & wellbeing).

Insensys Ltd - Condition Monitoring with Fibre Optics

Manufacturing, Data Science and Analytics | Portsmouth | On-Site Working

Your Contact

Name: Sylwia Srodek

Telephone number: 02380450550

Email: ssrodek@insensys.com

Organisation address

Insensys Ltd, 12 Manor Court, Fareham, Hants, PO15 5TJ

Start and End Date

Flexible (8 weeks within June to Sept)

Working Arrangements

In Office

Company Description

Insensys design and manufacture Fiber Optic Sensing systems. Our systems are installed in large Wind Turbines to measure aerodynamic loads on blades, to optimise performance and power output. Founded 20 years ago, with around 65 employees based near Fareham. This Placement will be within our Engineering teams, totalling around 15 qualified and experienced engineers. Placement will work with Insensys specialists in Mechanical Engineering; Electronics; Optoelectronics; Composite materials; firmware and software. The placement could lead to further opportunities with Insensys.

Project Title

Condition Monitoring Product Development

Project Brief /Job Description

Insensys is developing a Condition Monitoring product, based on our Fiber Optic sensing technology which involves developing algorithms for processing sensor data to provide Condition Monitoring applications for Wind Turbines. Applications include: Blade Imbalance Detection; Blade Resonance Monitoring; and early onset structural defects detection. There are many aspects of the development project where students could add much assistance.

Student Specification

This is a large project, with many activities suitable for Maths and Physics students.

Institute of Cosmology and Gravitation - Inferring Causation from Correlation

Data Science and Analytics, Astrophysics | Portsmouth | On-Site Working

Your Contact

Harry Desmond

Email: harry.desmond@port.ac.uk

Organisation address

Dennis Sciama Building, Portsmouth PO1 3FX

02392 845817

Start and End Date

Flexible Starting after June 3rd- July (Flexible)

Working Arrangements

Ideally in office as above but could be remote or hybrid

Company Description

The Institute of Cosmology and Gravitation (ICG) is a research institute at the University of Portsmouth devoted to the study of theoretical and observational cosmology, extragalactic astrophysics and gravitational waves. See <https://www.port.ac.uk/research/research-centres-and-groups/institute-of-cosmology-and-gravitation> for more information.

Project Title

Inferring causation from correlation

Project Brief /Job Description

An important topic at the intersection of statistics, data analysis and machine learning is the methodology for inferring the causal structure of observational data. In principle, under strong assumptions this may be done exactly, although uncertainties in the data make all methods unreliable to some degree. Under weaker assumptions causal structure may only be inferred up to an "equivalence class", all members of which have a qualitatively identical set of conditional interdependencies. The topic has however received relatively little attention, and has not found widespread application in science. The aim of this project is to develop methods for causal inference and apply them to problems in science (especially astrophysics). We will begin by reviewing the literature and the public implementations of

causal inference algorithms to get up to speed with the current state of the field. We will then apply the algorithms to real-world and synthetic datasets, both to study the algorithms'

performance and to discover causal structures in scientific data. The overall goal will be a comprehensive understanding of the conditions under which various aspects of causality may be inferred, a set of optimised algorithms for the purpose, and new knowledge about the causal behaviour of physical processes.

Student Specification

Background knowledge of -- and interest in -- statistics is a must. Familiarity with programming in Python will be highly beneficial.

MeVitae - Full Stack Developer

Software Development | Oxfordshire | Remote Working

Your Contact

Riham Satti

Email: riham.satti@mevitae.com

Telephone number: +447368599898

Organisation address

MeVitae (Oxiway Limited), F26 R27 Atlas Building, Harwell OX11 0QX

Start and End Date

July- September Flexible

Working Arrangements

Remote

Company Description

MeVitae is on a mission to transform the workforce, developing the most successful and innovative technology to drive diversity into organisations across the world.

As part of the \$100 million D&I tech industry, MeVitae is one of the fastest scaling D&I start-ups in the country, with some of the most influential tech investors on board, including the Co-founder of Shazam, and a director of Microsoft. Furthermore, In recent years, MeVitae has collaborated with both the European Space Agency, and Oxford University, researching, refining, and developing the most innovative solutions to help transform the workforce worldwide.

Offering a suite of AI tools to mitigate unconscious and algorithmic biases, MeVitae help's organisations hire smarter, faster, and fairer, allowing them to build more diverse and productive teams. One such way is through our blind recruiting solution, which plugs in to redact more than 20 types of personal identifiers, including gender, ethnicity, and university from CV's and Cover Letters, directly from a company's Application Tracking System.

As a tight-knit laid back team who live by the ethos of work hard-play hard, we're looking for an ambitious like-minded individual to join our small team, keen to both accelerate their career and the growth of MeVitae.

Project Title

Full Stack Developer Intern

Project Brief /Job Description

We are looking for an enthusiastic and capable developer to join the development of various full stack projects, using React and TypeScript in the frontend, and a combination of Rust, Go and C# on the backend, deployed within a Kubernetes cluster (experience with Kubernetes isn't required!).

Our focus this summer is to build a series of web-based tools for our clients to better interact with our support articles and support staff, in the same place. You will take on board the requirements of the support team, as well as the requests from customers, building for a variety of use-cases. During this, you'll be well supervised by our frontend team.

Student specification

- Predicted or obtained 2:1 or equivalent in a technical degree such as Computer Science, Maths, Physics, or similar.
- Eligible to work in the UK.
- Experience in any (not all!) of: Rust, Go, TypeScript, or JavaScript.
- Drive and passion to engineer things properly, in a well thought out, reliable and modular way.
- Ability to produce good documentation, allowing other developers to easily start contributing to your codebase.
- Skilled at taking requirements onboard and finding solutions that minimise friction for all user-groups, while staying within a reasonable scope.
- A desire to work in an exciting and innovative start-up environment.

An exceptional candidate will:

- Have experience building frontends in React.
- Be proficient in either Go or Rust.
- Have excellent communication skills and an ability to work collaboratively on a larger project while taking individual responsibility for parts of a system.

MeVitae - AI Research in AI Fairness

Data Science and Analytics | Oxfordshire | Remote Working

Your Contact

Name: Dr Bernet Meijer

Email: careers@mevitae.com

Telephone number: 07368599898

Organisation address

MeVitae (Oxiway Limited), F26 R27 Atlas Building, Harwell OX11 0QX

Start and End Date

July- September Flexible

Working Arrangements

Remote

Company Description

MeVitae is on a mission to transform the workforce, developing the most successful and innovative technology to drive diversity into organisations across the world.

As part of the \$100 million D&I tech industry, MeVitae is one of the fastest scaling D&I start-ups in the country, with some of the most influential tech investors on board, including the Co-founder of Shazam, and a director of Microsoft. Furthermore, In recent years, MeVitae has collaborated with both the European Space Agency, and Oxford University, researching, refining, and developing the most innovative solutions to help transform the workforce worldwide.

Offering a suite of AI tools to mitigate unconscious and algorithmic biases, MeVitae help's organisations hire smarter, faster, and fairer, allowing them to build more diverse and productive teams. One such way is through our blind recruiting solution, which plugs in to redact more than 20 types of personal identifiers, including gender, ethnicity, and university from CV's and Cover Letters, directly from a company's Application Tracking System.

As a tight-knit laid back team who live by the ethos of work hard-play hard, we're looking for an ambitious like-minded individual to join our small team, keen to both accelerate their career and the growth of MeVitae.

Project Title

AI Research Intern – AI Fairness

Project Brief /Job Description

We are seeking a passionate and enthusiastic AI research intern to join our team.

When applying AI algorithms, it is imperative to meticulously assess their fairness. This involves carefully using statistical tests and annotated datasets as the basis for thorough evaluations. Given the time-consuming nature of manual dataset labelling, we have set out to create machine learning models that can label data on their own.

Throughout the duration of this internship, the successful candidate will be tasked with training models adept at predicting protected characteristics from textual documents. This process will culminate in the creation of a fairness evaluation dataset and subsequently using this dataset to scrutinise various in-house algorithms at MeVitae for fairness. This project will introduce the candidate to a wide range of techniques in natural language processing, predictive modelling and statistics, and offer plenty of scope for creative thinking. The candidate will work in close proximity with our tightly-knit research team, but will also be given the autonomy to develop and present their own ideas.

Student specification

Minimum requirements

- Predicted or obtained 2:1 or equivalent in a technical degree such as Maths, Physics, Computer Science or similar.
- Eligible to work in the UK.
- Experience with coding in Python.
- Advanced conceptual, analytical, and problem-solving abilities.
- Ability to explain complex ideas to technical and non-technical members of the team.
- Passionate about AI and a strong desire to learn and develop new skills.
- A desire to work in an exciting and innovative start-up environment.

Good to have

- Experience with machine learning or natural language processing.
- Experience with packages such as Scikit-learn and spaCy.

Openshaw & Co - Patent Attorney

Law | Surrey | Hybrid Working

Your contact

Andrew Hollos

Telephone: 01252 741741

Email: andrew.hollos@openshaw-and-co.com

Address of placement

Openshaw & Co, 8 Castle Street,

Farnham, Surrey.

GU9 7HR

Dates of Placement

1st July – 23rd August (flexible)

Organisation profile

Openshaw & Co is a UK and European Patent Attorney firm based in the centre of Farnham, Surrey. Our clients range from large multinationals to SMEs and cover a wide range of interesting and advanced technologies including aerospace, mobile, networks, computers, and software.

Placement title

Trainee Patent Attorney

Working Arrangements

Hybrid

Placement description

This placement will give students experience of the work that a Patent Attorney undertakes. The work will include:

- the analysis of scientific or technical documents, including previously granted patents, to assess whether an invention is new and inventive;
- the preparation of responses to reports from patent examiners, containing detailed and logical argumentation; and
- the writing of detailed descriptions of inventions in precise legal terms (patent drafts).

The student will be exposed to a wide range of interesting and advanced technologies. The student will gain an insight into the IP profession and what is required to train and qualify as a Patent Attorney in private practice.

Student specification

The student must possess, or be in line to achieve, a minimum 2:1 Honours Degree in Physics, Mathematics, or Electronic/Electrical Engineering, or similar. The student should have a natural, inquisitive desire to advise clients in the protection of intellectual property rights. The student should possess an aptitude for communicating complex information in a straightforward manner, be confident, meticulous, and have a keen eye for detail.

3-Sci - Development of Monitoring Sensors for Fusion Energy Sources

Manufacturing | Hampshire | On-Site Working

Your Contact

Stephanie King

Telephone number: 02393 877590

Email: careers@3-Sci.com

Organisation address

3-Sci, Fareham Innovation Centre, Merlin House, Meteor Way, Lee-on-the-Solent. Hampshire. PO13 9FU.

Start and End Date

Flexible

Working Arrangements

In-office. Potential for occasional working from home

Company Description

3-Sci is the creator of a range of industrial monitoring products designed for challenging environments. We have an established portfolio of monitoring and process control systems for heavy industry, including Wi-Corr® CUI and Wi-Corr® UT, our world leading advanced wireless sensing systems for corrosion damage. More recently, we have expanded our condition monitoring product range into renewable energy infrastructure in offshore wind and fusion reactors. We integrate our innovative sensors with proprietary software and algorithms to enable data-driven decision making. Our revolutionary technology has been deployed by multinational companies worldwide.

Fusion is coming! Get involved now to play your part in tackling the climate crisis.

3-Sci are offering a fantastic opportunity to play a key role in an exciting, cutting-edge technology development programme for the fusion industry.

Based on the sunny south coast of England (not far from the beach!) we are a small, friendly team of scientists and engineers who love cracking tough problems! We are welcoming physics applicants with appropriate practical skills to join us as we develop sensors for fusion environments. 3-Sci provides a supportive, inclusive work environment and are waiting for your application now!

Project Title

Development and testing of monitoring sensors for fusion energy sources.

Project Brief /Job Description

Over the course of an 8-week placement you can look forward to getting stuck-in to a range of tasks, including;

- Design and construction of a magnetic sensor based on 3-Sci's novel electromagnetic sensing techniques.
- Background research and experimental design
- Prototype testing and trial preparation for on-site representative fusion trials.
- FEA modelling to explore the limits of 3-Sci's electromagnetic sensing techniques.
- Get hands-on with assembly and test of other products from around 3-Sci's business.

If any or all of these tasks sound 'up your street' then please send us your CV and covering letter outlining your interest in the role. We can't wait to hear from you.

Student Specification

Applied physicist or physicist that enjoys hands-on experimental work.

Trulife Optics Ltd - Optimising Adhesion Strength for Building Holographic Augmented Reality Lenses

Manufacturing | London | On-Site Working

Your Contact

Christian Sabado

Telephone number: 0207 510 0880

Email: christian@trulifeoptics.com

Organisation address

Trulife Optics Ltd, Trinity Buoy Wharf, Fittingshop Building 79, London E14 0FR

Start and End Date

Flexible

Working Arrangements

In Office

Company Description

TruLife optics is a world-leading holography company with over 200 years of combined experience in holography. The company specialises in holographic optical technology for use in head-up display and augmented reality devices. The company focuses on all aspects of holography from the conception of new ideas, theoretical modelling & optimisation, in house production, testing and mass replication of holograms. The placement will be based in our R&D facility in East-London, where we have a friendly, multi-disciplinary team of ~30 people.

Project Title

Optimising Adhesion Strength for Building Holographic Augmented Reality Lenses

Project brief

This internship will involve conducting peel adhesion tests on photopolymer films, exploring the impact of dwelling time, sample storage temperature, lamination pressure, and peel rate on polymer adhesion. This investigation will also cover the polymer adhesion strength as a function of the various polymer substrates and lens materials. Additionally, the intern will explore interfacial modifications to enhance adhesion, while considering any holographic effects. Ideal for those interested in material science and surface engineering, this project offers hands-on experience in characterising material performance.

Student specification

Interests/experience in: Physics, optics, organic materials, polymers, interfaces, adhesion, stress and strain, surface tension, surface roughness. Student should be an experimentalist with a good understanding of data reliability, statistics and overall strong lab practices

Trulife Optics Ltd - Design Technology for use in Alignment and Metrology of Optical Systems

Manufacturing, Laser and Quantum Technology, Software Development | London | On-Site Working

Your Contact

John Mitchell
Telephone number: 0207 510 0880
Email: John@trulifeoptics.com

Organisation address

Trulife Optics Ltd, Trinity Buoy Wharf, Fittingshop Building 79, London E14 0FR

Start and End Date

Flexible

Working Arrangements

In Office

Company Description

TruLife optics is a world-leading holography company with over 200 years of combined experience in holography. The company specialises in holographic optical technology for use in head-up display and augmented reality devices. The company focuses on all aspects of holography from the conception of new ideas, theoretical modelling & optimisation, in house production, testing and mass replication of holograms. The placement will be based in our R&D facility in East-London, where we have a friendly, multi-disciplinary team of ~30 people.

Project Title

Design and construct an electronic optical autocollimator/ autostigmatic microscope for use in alignment and metrology of optical systems

Project brief

An autocollimator is a versatile optical instrument used for alignment of flat optical surfaces (mirrors etc.). An autostigmatic microscope is an enhancement, with a digital camera, laser diode light source, and auxiliary lenses, which allows the location and alignment of the centres of curvature of spherical surfaces (lenses etc.). We would like the candidate to design and build such an instrument using mostly off-the-shelf catalogue components and to develop software to acquire, analyse and display images from the camera and to control the intensity of the laser diode.

Student specification

Experience and/or interest in optics and lasers Electronics (e.g Arduino interfacing) Software (Python preferred)

Trulife Optics Ltd - Producing Holograms using Photopolymer

Manufacturing, Data Science and Analytics | London | On-Site

Your Contact

Name: Kingsley Hannon

Telephone number: 0207 510 0880

Email: kingsley@trulifeoptics.com

Organisation address

Trulife Optics Ltd, Trinity Buoy Wharf, Fittingshop Building 79, London E14 0FR

Start and End Date

Flexible

Working Arrangements

In Office

Company Description

TruLife optics is a world-leading holography company with over 200 years of combined experience in holography. The company specialises in holographic optical technology for use in head-up display and augmented reality devices. The company focuses on all aspects of holography from the conception of new ideas, theoretical modelling & optimisation, in house production, testing and mass replication of holograms. The placement will be based in our R&D facility in East-London, where we have a friendly, multi-disciplinary team of ~30 people.

Project Title

Investigating optimal parameters when producing holograms using photopolymer.

Project brief

Holograms are used in augmented reality (AR) devices to overlay a virtual image on top of a real-world image. Holograms are produced on photopolymers by exposing them to laser light. To make them requires trial and error to find the correct proportions of light as well as modifying other variables required for exposure. For the photopolymer these parameters are not fully determined. The performance of the hologram may see variation due to using different parts of the polymer, differences in temperatures and general day to day changes. The project will be lab based and require building an automated XY stage whereby multiple holograms can be created on each glass plate. This will allow for changes in variables to be carried out quickly as well as producing results which are statistically significant. The laser

light can be adjusted to modify beam ratios, RGB colour ratios, effects of polarisation and power intensity. The holograms will then be measured on a spectrometer. The project will be fully onsite.

Student specification

An interest in automation, optics, laser trained, lab work, data analysis, python.

UKAEA - Developing a Neural Network for Fast Particle Pressure Prediction

Data Science and Analytics, Particle and Plasma Physics | Oxfordshire | Hybrid Working

Your Contact

Aravinda Perera

Email: aravinda.perera@ukaea.uk

APPLICATIONS TO BE MADE VIA SMART RECRUITER LINK HERE:

<https://smrtr.io/jdN64>

Organisation address

UK Atomic Energy Authority, Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB.

The UK Atomic Energy Authority is accessible by train, car and bike from Oxford, Abingdon, and Didcot.

Start and End Date

01/07/2023- 30/09/2023 (approximate and/or flexible)

Working Arrangements

Hybrid preferred fully remote possible

Company Description

By 2050, the planet could be using twice as much electricity compared to today. Are you interested in joining an organisation where your work will contribute and help to shape the future of the world's energy? If so, our summer placement scheme provides a perfect gateway into a future career in this industry.

Fusion, the process that powers the Sun and Stars, is one of the most promising options for generating the cleaner, carbon-free energy that our world badly needs. UKAEA are at the forefront of realising energy from fusion, working with industry and research partners to deliver the ground-breaking developments that will underpin tomorrow's fusion power stations with the aim of bringing fusion electricity to the grid.

Computing plays a vital role in fusion research. Whether in modelling the complex physics of reactor grade plasmas, assisting with detailed engineering design work, understanding the properties of materials under extreme conditions or in processing the large quantities of data produced

by tokamak experiments, taking advantage of the latest advances in computing can provide valuable insights to researchers. The Computational Science and Engineering Unit develops state-of-the-art numerical methods to address these challenges, and combined with AI and Machine Learning techniques, accelerates the research and design of future fusion power plants.

Project Title

Developing a neural network for fast particle pressure prediction

Project Brief /Job Description

This placement will develop a neural network emulator for the plasma transport code TRANSP, capable of generating estimates for the fast particle pressure within a fusion tokamak.

The student will make use of an existing dataset of TRANSP simulations based on the latest experiments on MAST-Upgrade, and if required, generate new data by running their own simulations using a pre-existing pipeline as a “black box”.

High-level surrogate modelling libraries in Python will be used, such as EasySurrogate, and/or in-house frameworks designed by collaborators at the Hartree Centre, to train and test a neural-network-based TRANSP emulator with this dataset.

This work will pave the way to enabling rapid, low-uncertainty reconstruction of the plasma equilibrium state from experimental diagnostics for the first time – an indispensable tool for understanding plasma behaviour and tokamak performance.

Student Specification

The ideal candidate possesses some or all of the below:

- An interest in machine learning and/or computational science.
- An interest in fusion energy.
- Experience with Python, either from personal projects, university, or work experience.
- Motivation to improve Python programming skills and write good quality software.
- Good time management and communication skills.