



Job Position: Senior Machine Learning Engineer at TOffeeAM

The transition to the new manufacturing paradigm introduced by 3D printing is challenging. The complexity of designs that can be 3D printed far exceeds the complexity of current engineering designs, which are still constrained by human experience and old manufacturing techniques. Therefore, the real potential of industrial 3D printing remains unexploited.

At TOffeeAM we are breaking new ground. Our innovative design software equips engineers with the tools necessary to realise the full potential of modern manufacturing methods.

Our software, TOffee, automatically designs superior complex components for engines, aircraft, and cars, among many other applications. These components include heat exchangers, mixers, valves, and structural components, and the application list is growing consistently. TOffee's designs are generated using a combination of artificial intelligence, numerical simulation, and sophisticated mathematical optimization. They are complex beyond the human imagination but can nevertheless be manufactured using 3D printing and provide a step-change in the efficiency and reliability of a wide range of engineering components (<https://www.toffeem.co.uk/software/>).

The position:

At TOffeeAM, you will join a passionate team of software engineers, scientists, and academics. Our goal is to make sophisticated design software accessible to as many engineers as possible. You will see cutting edge applications that range from supersonic aircraft to microprocessors, from F1 cars to coffee pots!

Your main activities will include:

- Research on Artificial Intelligence and Deep Learning techniques, with particular focus on Computational Fluid Dynamics (CFD) applications.
- Develop machine learning methods for CFD and deploy them on existing software infrastructure.
- Setting up, running, and troubleshooting AI-type problems as well as interpreting the results.
- Writing and revising user documentation as well as providing support and training to customers.
- The candidate, on occasion, be placed as the lead on a project. In this capacity they will be expected to perform simulations and develop new software as needed.

We currently use C++ and Python. However, if you can convince us that another language or framework is best for the job at hand then we are all ears!

The ideal candidate will:

At TOffeeAM we primarily look for talented and passionate engineers that will fit well to our growing team. Some of the following experience and skills will be useful for the role:

- Have 2+ years of experience with using and developing AI techniques in industry or academia.
- Have knowledge and understanding of Computational Fluid Dynamics (CFD) techniques (being able to interpret CFD results)
- Be entitled to work in UK. If not, possibility for a work VISA (contact us for more information).

- Have a PhD or master's degree in machine learning, computer science, mathematics, engineering, or a related field.
- Demonstrable experience writing good code. Ideally this will be with C++ or Python.
- Have relevant experience with deep neural network architectures.
- Be able to multi-task and juggle many competing priorities.
- Be comfortable communicating clearly and collaborating within a small team to implement new features and resolve existing issues. Be willing to take and give constructive feedback and criticism.
- Have experience with cloud computing services and HPC, especially AWS.

Other experience we are looking for:

Obviously, we do not expect you to have experience in all the following fields, but the best candidates may have exposure to 1-2 of them.

- Experience with thorough data quality analysis.
- Research experience in Reinforcement Learning.
- Knowledge and practical experience in several of the following areas: machine learning, statistics, NLP, deep learning, recommendation systems, computer vision, information retrieval.
- Numerical optimisation / topology optimisation.
- Software design for engineering problems.
- Modern engineering design and analysis tools, especially CAD software, computational fluid dynamics, and finite element analysis.
- Additive manufacturing methods and constraints.
- Design and optimization of lattice structures.
- Familiarity with engineering design and testing standards.

Starting salary range £45-60k, dependent on experience. Performance-based Stock Option plan after probation period. We are already accepting applications for a potential start of employment after September 2022. If you think you would be a good fit for this role, please contact us at:

a.gaymann@toffeeam.co.uk