

Job Specification

Senior Modelling and Simulation Engineer

Responsible to: Head of Modelling and Simulation

Grade: Senior

Salary: To be agreed

Hours of work: 37 hours per week

Work location: Oakley, Bedford

Role Purpose:

Aerospace system and subsystem model requirements analysis, definition and architecting; model development and integration; model verification and validation using MATLAB, Simulink, Stateflow, Simscape and related tools; compliant with standard processes of the programme framework. Some element of customer facing may be required.

Key Responsibilities:

- Work collaboratively as part of a small team delivering a customer-focused task-based modelling and simulation support service.
- Develop and maintain multi-physics models of aircraft, aerospace systems and environment.
- Use the models to support:
 - initial feasibility and concept proving studies
 - design development and trade-off studies
 - HIL/SIL ground testing
 - production of formal performance statements to support the certificate of design and design verification processes
- Maintain appropriate design records, ensuring compliance with appropriate quality standards
- Perform trade-off studies in simulation to optimise design and define functional requirements.
- Design and develop control and estimation algorithms.
- Support Hardware, Software and Pilot-in-the-loop (HIL/SIL/PIL) testing
- Integration and verification of model components from external suppliers
- Engage with internal stakeholders who use the models, understand and respond to their needs and ensure that the model is fit for its intended use.
- Act as a point of contact for Modelling interactions with other teams e.g. Software, Project Managers etc.
- Auto-code models to C/C++ and dll
- Integrate models (Simulink and dll) into system-of-systems models.
- Package models for integration into distributed simulations.
- Analyse results from model integration and simulation development to provide understanding of the component models performance and their interactions.

- Undertake simulation development, testing and application with results analysis to provide understanding of component models and their interactions.
- Sanity check model performance and simulation results through cross-checking with other sources of information and engineering estimates.
- Work with aerospace vehicle and system models including:
 - Flight dynamics model trimming
 - Flight dynamics model linearisation
 - Linear flight dynamics model extraction, reduction and analysis
 - Aircraft performance analysis
 - Solving optimisation problems.
- Validation and Verification of model performance and simulation results against requirements.
- Generate documentation (User Guides, Interface Control Documents, Delivery Notes, Verification and Validation reports) for models, simulations and applications at an appropriate level for the expected end user's technical ability.
- Review documentation for accurate technical content and quality to ensure it meets the required high standards.
- Report on technical issues encountered with 3rd party provided models and simulations covering the issues, significance and potential resolutions.

Other Duties and Responsibilities

- Actively participate in Blue Bear's Performance Management Scheme.
- Undertake such other duties and responsibilities as may be reasonably required within the grade and level of the post.
- Perform different tasks as necessitated by your evolving role within the company and the overall business objectives of the company. Some travel within the UK and internationally may be required.

What's in it for you

- Work in a highly motivated SME at the cutting edge of Engineering. See your work rapidly progress to live testing in a matter of months not years.
- Hybrid working available
- Competitive Salary
- Pensions
- Life Cover 5x your salary
- Income Protection Cover
- BUPA Medical and Dental
- Health Cash Plan
- Employee Assistance Programme
- Refer a Friend Reward Scheme

Equality and Diversity

We are committed to the promotion of equality of opportunity in all of our activities and to encouraging access to our organisation from all groups irrespective of the equality strands. We are working to create an environment in which cultural diversity and individual difference are positively valued in an atmosphere free from harassment and discrimination. We take our legal and moral obligations with respect to equal opportunities seriously and welcome dialogue with individuals on ways in which our equal opportunities policies and practice can be enhanced.

Health and Safety

The organisation together with the assistance of all employees are fully committed to developing a positive safety culture.

We encourage and support employees becoming involved in and participating in health, safety and welfare matters. Our goal is to motivate and empower all employees to work safely and protect their long-term health, not simply to avoid accidents.

PERSON SPECIFICATION

Education/Qualifications	S/L	I	A
<i>Essential:</i>			
<ul style="list-style-type: none"> • Batchelor's degree in a relevant subject (e.g. Aerospace Engineering, Mechanical Engineering, Electrical Engineering, Engineering Mathematics or Physics) 	X		
<i>Desirable:</i>			
<ul style="list-style-type: none"> • Higher degree (e.g. Masters/PhD) in a relevant subject (e.g. Aerospace Engineering, Mechanical Engineering, Electrical Engineering, Engineering Mathematics or Physics) 	X		
Knowledge and Experience			
<i>Essential:</i>			
<ul style="list-style-type: none"> • Experience in modelling of dynamical multi-physics systems (e.g. Mechanical, Electrical, Aerodynamic, Hydraulic) 	X		
<ul style="list-style-type: none"> • A knowledge and understanding of dynamics, control and estimation theory 	X		
<ul style="list-style-type: none"> • A knowledge of the Systems Engineering lifecycle including: <ul style="list-style-type: none"> ○ Systems design and requirements capture ○ Testing, verification and validation 	X		
<ul style="list-style-type: none"> • MATLAB, Simulink 	X		
<ul style="list-style-type: none"> • Process development and documentation 	X		
<i>Desirable:</i>			
<ul style="list-style-type: none"> • Experience with acausal modelling languages (e.g. Simscape/Modelica) 		X	
<ul style="list-style-type: none"> • Stateflow, Matlab Coder, Simulink Coder, 		X	
<ul style="list-style-type: none"> • Control System Toolbox, Aerospace Toolbox/Blockset, Simscape Multibody 			
<ul style="list-style-type: none"> • Simulink Check, Matlab/Simulink Test, Simulink Requirements 		X	
<ul style="list-style-type: none"> • Experience with DO-178C, DO-331, ED-215 and ED-218 		X	
<ul style="list-style-type: none"> • Experience with autonomous aerial systems 		X	
<ul style="list-style-type: none"> • Knowledge and understanding of aircraft flight dynamics and control 		X	
<ul style="list-style-type: none"> • A knowledge and understanding of theoretical and numerical aerodynamics 		X	
<ul style="list-style-type: none"> • Git Source Code Management 		X	
<ul style="list-style-type: none"> • SIMDIS 3-D Analysis and Display Toolset 		X	
<ul style="list-style-type: none"> • Distributed Simulation Experience (DIS, HLA) 		X	
<ul style="list-style-type: none"> • GUI development 		X	
<ul style="list-style-type: none"> • Military avionics and sensors 		X	
<ul style="list-style-type: none"> • C/C++ 		X	
<ul style="list-style-type: none"> • Other programming languages (C# / Python / Java) 		X	
Personal/Behavioural Attributes			
<i>Essential:</i>			
<ul style="list-style-type: none"> • Cooperative teamwork 		X	
<ul style="list-style-type: none"> • Confident and articulate with good communication skills 		X	
<ul style="list-style-type: none"> • Prepared to travel within the UK and internationally 		X	
Other Requirements			
Subject to security vetting to a minimum SC level and should be prepared to undertake DV clearance	X		

S/L = Short Listing I= Interview A=Assessment