ROLE PROFILE

**Job Title:** Research Fellowship - Next Generation Prediction Methodologies and Tools for System Safety Analysis (Mathematical Modelling)

**School/Department:** Faculty of Engineering

**Job Family and Level:** Research & Teaching Level 5

**Contract Status:** Permanent

**Hours of Work:** Full-time (36.25 hours per week)

**Location:** Resilience Engineering Research Group, Faculty of Engineering, University of Nottingham.

**Reporting to:** The post will report to Professor John Andrews and will also receive guidance and direction from the academic team in the department to which the successful candidate is appointed, dependant on experience and educational background.

**Purpose of the New Role:** A Research Fellowship dedicated to successful completion of the Lloyd’s Register Foundation (LRF) funded project “Next Generation Prediction Methodologies and Tools for System Safety Analysis”. The goal is to develop and establish the next generation of prediction methodologies and software tools to perform risk management for safety critical systems, and transfer these to industry through application in the nuclear, railway, and aerospace industries. Over the course of the LRF Project (5-years), the Fellow will transition to an academic position within the Faculty of Engineering, taking on roles associated with an Assistant Professor.

### Main Responsibilities

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<tr>
<th>Main Responsibilities</th>
<th>% time per year</th>
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<td>1. To ensure that the modelling approaches developed during the project meet the industrial requirements. Novel safety assessment methodologies will be produced initially for the nuclear, aerospace and railway industries. These will then be generalised for other industries.</td>
<td>60%</td>
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<td>2. To collaborate in writing papers for submission to journals and conferences and prepare progress reports on the results of research.</td>
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<td>3. To present the results of research at project progress meetings and at conferences.</td>
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<td>4. To assist in the co-ordination of the research and related administrative tasks, including liaising with members of the Project Management Committee, and Technical Advisory Committee.</td>
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### Knowledge, Skills, Qualifications & Experience

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<th>Essential</th>
<th>Desirable</th>
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<td><strong>Qualifications/ Education</strong></td>
<td>A good honours degree or equivalent in an engineering discipline, mathematics, physics or computer science (1).</td>
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<td>PhD in a topic related to risk, safety, reliability or maintenance modelling of engineering systems (1).</td>
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<td><strong>Knowledge &amp; Skills</strong></td>
<td>Extensive knowledge of safety assessment and risk modelling (1,2,3).</td>
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- Knowledge of the fault tree and event tree methods used in probabilistic safety assessment (1,2,3).
- An understanding of Petri net models solved using Monte Carlo simulation (1,2,3).
- Experience of producing software for model solutions (1,2,3).
- Ability to produce high impact / 4* outputs (1,3).
- Able to communicate effectively with industry and academia, including a demonstrable ability to teach undergraduates (1,2,3).
- Ability to be an independent researcher that is able to work within and support a team (3).
- To have developed interdisciplinary and international collaborations (1,3).

**IT Skills**
- Competent IT skills and Internet usage (1,3).

**Experience**
- Significant experience within a research or academic environment (1,3).
- Publication of high impact journal articles (1,3).
- Experience in supervision of PhD students (1,3).

**Personal Attributes / Other**
- Able to travel frequently to Universities and companies throughout the UK and overseas as required (3).
- Able to work assertively in a team (3).
- Commitment to observing the University’s Equal Opportunities policy at all times (3).
- A willingness to undertake further training as appropriate and to adopt new procedures as and when required (3).


In summary, the successful candidate will be responsible for:

- Management of technical aspects of the project as required, demonstrating effective project planning and use of resources.
- Communicating effectively with all project partners.
- Working effectively within the project team, and the wider academic groups, to achieve the overall goals of the project.
- Travel to the partners’ locations within the UK and Europe/USA/India to report on the progress of the project.
- Pursue excellence and maintain high standards of safety in all activities.
- Formulate detailed plans for the project based on broad guidance from the project team and to assist other researchers with this task.
- Feedback to the project team on progress, to make recommendations for next steps and to prepare interim and final project reports.
- To produce research papers suitable for publication in high impact academic journals and for presentation at specialist scientific conferences.

Over the period of the Transitional Fellowship, the Fellow will be also become responsible for:

- Developing an independent portfolio of research
- Managing Research Staff and Students
- Establishing income streams to support research growth
- A growing reputation for world leading research
Teaching At the outset, teaching will not be a focus of the Transitional Fellow. However, over the course of the Fellowship, the post will transition towards an academic role, and it will be expected that the Fellow will assume greater responsibility for teaching and other academic commitments. The Fellow will be expected to become a fellow of the Higher Education Academy, to be committed to the teaching and learning of undergraduates and to support their development.

Progression and Review Process

In addition to the standard University of Nottingham PDPR (Personal Development and Performance Review) process, the role holder will also be formally reviewed in relation to their transition to Assistant Professor, after year 2 and year 4 of the 5 year Fellowship.

Other Related Activities and Functions

- To work effectively with relevant administrative, technical and academic staff in the Department and across the University.
- To engage in training programmes in the University (e.g. through Staff Development) which are consistent with the role holders needs and aspirations and those of the project team and the host department.
- To undertake such other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

The University of Nottingham strongly endorses Athena SWAN principles, with commitment from all levels of the organisation in furthering women’s careers. It is our mission to ensure equal opportunity, best working practices and fair policies for all.