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Risk and Safety

Academic staff

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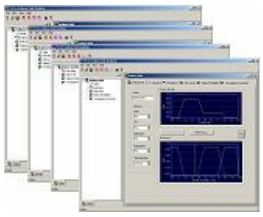
Railway safety risk analysis is a very complicated subject where safety is determined by numerous factors including human error. Many railway safety risk assessment techniques currently used are comparatively mature tools. However, in many circumstances, the application of these tools may not give satisfactory results due to the lack of safety risk data or the high level of uncertainty involved in the safety risk data available. It is therefore essential to develop new safety risk analysis methods to identify major hazards and assess the associated risks in an acceptable way in various environments where such mature tools cannot be effectively or efficiently applied.

Most recently, the group has been developing new techniques and methodologies to facilitate railway safety risk assessment with railway industry major players including LUL, RSSB, Network Rail, Tube Lines Ltd, Metronet SSL, Serco Assurance Ltd, Risktech Solution Ltd, Balfour Beatty, TACO, Eurostar (UK) Ltd and Amey Plc. The research work has been funded from a variety of sources including industry, the research councils and government agencies.



The research and consultancy activities address 1) the development and application of rational methods and strategies for designing and maintaining railway safety and reliability of infrastructure systems, 2) the formal safety and reliability assessment of both rolling stock projects and large scale infrastructure projects, 3) the development of computer tools for safety, risk and reliability evaluations, 4) safety-cost analysis and maintenance analysis, 5) multiple criteria in decision-making, 6) human error studies, and 7) overall safety case preparation for industry.

Current Projects:

Further details of projects listed can be located on the **group research page (/research/activity/civil-engineering/risk/index.aspx)**

- **Recovery from Railway Incidents (PhD project) - pdf (/Documents/college-eps/railway/recovery-from-incidents.pdf)**
- Application of Fuzzy Reasoning Approach to the Railway Safety Risk Assessment Process (EPSRC, RSSB, LUL, Tube Lines, Metronet Rail, Network Rail, Serco Assurance Ltd and Risktech Solution Ltd, Postdoctoral Project
- Improved Rail Safety-risk Assessment Study (LUL, Tube Lines and Metronet Rail, PhD project)
- A Study on Reliability and Maintenance of Railway Vehicles (South Korea Transport, PhD project)
- An Intelligent Safety Prediction System for Rail Design and Maintenance (EPSRC, RSSB and LUL, Postdoctoral project)
- Development of Risk Assessment Models and Tools for Railway Risk Analysis (PhD project)

There are other current research projects related to project risk management, construction risk management and Design for safety etc can be found on the **group research site (/research/activity/civil-engineering/risk/index.aspx)** .

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