Evacuation Simulation of a Train in a Tunnel

Security of tunnels is a recent topic in planning. Because of the high costs of increasing security in existing tunnels or to build new tunnels, simulations of individual movement are appropriate tools to analyse the infrastructural design and planned measures of e.g. security stations. Incidences like fire or explosion could be simulated without the need for large experiments.

For a situation with a fire at the machine of a TGV situated in a tunnel an evacuation simulation was developed. Agents, as representatives for travellers, are modelled with rich behaviour concerning the movement, the recognition of signs and temperature, reactions to smoke in the environment and communication concerning sharing their experiences. Variants of different infrastructual layouts of tracks, security galleries, security areas and doors were studied using the simulation of about 750 passengers leaving the train, searching their way to a parallel secure gallery.

The results, as e.g. travel times, evacuation times, densities and amount of dead passengers are used within the whole decision process about the planned tunnel and it's elements.

Kunde
Lyon Turin Ferroviaire

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Erbrachte Leistungen
- evacuation simulation
- modelling concept of evacuation
- behavioural modelling
- study of variants
- development of measures

Charakteristische Angaben
- multi agent system
- microscopic
- simulation: 2 TGV
- simulated agents: 750
- simulation step: 1 sec