Dynamic Fault Tree analysis method

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The Entry briefly introduces the Dynamic Fault Tree analysis method proposed by P. Gao et al on the 2020 IEEE 23rd International Conference on Intelligent Transportation Systems (ITSC).

analysis method | Intelligent Transportation System | the ATP system | fault events

Fault tree analysis (FTA) is a deductive failure analysis method from top to bottom, which uses Brin logic to combine low order events to analyze the states that do not want to appear in the system. Fault tree analysis is mainly used in the field of safety engineering and reliability engineering to understand the causes of system failure and to find the best way to reduce the risk or to confirm the incidence of a safety accident or a specific system failure. Fault tree analysis is also used in aerospace, nuclear power, chemical processes, pharmaceutical, petrochemical and other high-risk industries, as well as in other areas of risk identification, such as failure of social service systems. Fault tree analysis is also used in software engineering, in debugging, and is related to the technology of eliminating the cause of the error.

In the aerospace field, the broader term "system failure state" is used to describe the fault tree between the state that does not want to appear at the bottom and the failure event at the top. These states are classified according to the severity of their results. Results the most serious state needs the most extensive fault tree analysis to deal with. Such "system failure states" and their classification were previously addressed by functional hazard analysis.

The order of problem solving based on the Dynamic Fault Tree analysis method is: **1.** *Identify the possible fault events.* **2.** *According to the possible fault events, establish the analysis process of them.* **3.** *Through the control system(just like the ATP control system), analyze whether the fault events occur.* **4.** *If the fault events occur, solve them through the control system(just like the ATP control system).*

References

1. Pengfei Gao; Chao Liu; Hairong Dong; Wei Zheng; A Dynamic Fault Tree Based CBTC Onboard ATP System Safety Analysis Method*. *2020 IEEE 23rd International Conference on Intelligent Transportation Systems (ITSC)* **2020**, *None*, 1-7, 10.1109/itsc45102.2020.9294605.