From the Editor's Desk

JSS Technical Editor
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Cognition

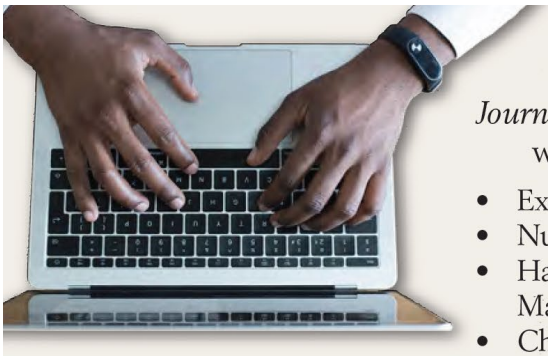
When accidents occur the question "What were they thinking?" is often asked by those of us who are investigating the situation. When we do system design, especially the system safety aspects, we often consider the cognitive process (and errors associated with this process) of the operator. We often also wonder about the thought processes of our colleagues, our management and probably should also wonder about ourselves. The work of Nobel Prize winner Daniel Kahneman [Ref 1] has stimulated some interesting discussion in the last several years. The main finding of Kahneman is that our minds are susceptible to systematic errors. I will enumerate a few examples that I find particularly interesting.

People are very good intuitive grammarians from the time they are children. However, people are not good intuitive statisticians. We have a bias in that we believe results based on inadequate evidence (i.e., a small number of observations). This problem is true even for actual statisticians, yes, the guys who taught us statistics.

Another common problem is that people tend to overestimate their understanding of the world and to underestimate the role of random chance in events as they unfold. Overconfidence is a factor in many accidents.

The first technical paper in this issue is "Human Reliability Analysis using a Human Factors Hazard Model" by Dustin S. Birch, Erika E. Miller and Thomas H. Bradley. This paper proposes a Human Factors Hazard Model (HFHM), which builds an HRA (Human Reliability Analysis) method from the tools of Fault Tree Analysis (FTA), Event Tree Analysis (ETA), and a novel model of considering serial Human Error Probability (HEP) more relevant to psychomotor-intensive industrial and commercial applications such as manufacturing, teleoperation, and vehicle operation.

The second technical paper is "Proposing the Use of Hazard Analysis for Machine Learning Data Sets" by H. Glenn Carter, Alexander Chan, Chris Vinegar and Jason Rupert. To provide information on the impor-



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tance of various attributes in the machine learning data sets, this paper proposes a new technique the authors call data hazard analysis. The data hazard analysis provides an approach to qualitatively analyze the training data set to reduce the risk associated with garbage in garbage out.

The third paper in this issue is "Review of the latest Developments in Automotive Safety Standardization for Driving Automation Systems" by Rami Debouk. With the introduction of complex driving automation systems, new standardization efforts to deal with safety of these systems have been initiated to address emerging gaps such as the human/automation roles and responsibilities in the presence/absence of the driver/user, the impact of the technological limitations and the verification and validation needs of automation systems. This paper highlights some of these gaps and introduces some of the latest developments in automotive safety standardization for driving automation systems.

The TBD article by Charlie Hoes describes the concept of "producer" and how it might apply the ISSS.

Regards,
Chuck

References

1. Kahneman, Daniel. Thinking Fast and Slow. Farrar, Straus and Giroux, New York, 2011