AWARDS

Moisseiff Award recognizes risk research

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ASCE has honored **Liang Liu**, Ph.D., Aff.M.ASCE; **David Y. Yang**, Ph.D., A.M.ASCE; and **Dan Frangopol**, Sc.D., P.E., F.SEI, F.EMI, Dist.M.ASCE, with the 2022 **Moisseiff Award** for the paper "Determining Target Reliability Index of Structures Based on Cost Optimization and Acceptance Criteria for Fatality Risk," *ASCE-ASME Journal of Risk Uncertainty in Engineering Systems, Part A: Civil Engineering*, Jun 2021.

Liu, Yang, and Frangopol greatly impressed the committee with the breadth of application in terms of topic and social impact. The authors have accomplished the goal of advancing the range of the profession, especially in their profound way of handling annual probability of death and mortality. The equation used to quantify fatalities will be a greatly significant asset to engineers and serve to broaden the profession.

In the study, the reliability index obtained from cost optimization is referred to as the optimal reliability index, while that obtained from calibration associated with an active constraint on human safety is called the acceptable reliability index. The paper clearly indicates (a) how cost optimization can be used to obtain lifetime and annual target reliability indices for the design of buildings and bridges, (b) how these indices can be applied at the structural component level or at the structural system level, and (c) how calibration can be used for limit states relating to structural components of buildings, bridges, ships, and offshore structures. In addition, the paper indicates how to consider human safety in structural design and clearly shows how the approaches used for considering human safety can be leveraged to devise human-safety-related constraints in cost optimization.

Various factors that may influence the optimal and acceptable target reliability indices were investigated in the paper through an extensive parametric study. The parameters considered include the acceptance criteria for fatality risk, the uncertainties associated with structural capacity and demand, and the number of potential fatalities.

The Moisseiff Award is given to the author or authors of an important paper published by the Society dealing with the broad field of structural design, including applied mechanics, as well as the theoretical analysis or construction improvement of engineering structures, such as bridges and frames, of any structural material.

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