A failure conceptual graph model for forensic in civil engineering - A case study of dam failure caused by heavy rain.

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Abstract. The construction industry is complex and potentially risky. Structural failure happens every day despite technical and technological advances. Forensic engineering is a discipline of failure study that aims to detect factors of structure failure. From there, lessons can be drawn to avoid similar failures in the future. Simultaneously, it allows designers, builders, or managers to develop safer alternatives and improve their practices. Forensic engineering has challenges in organizing and exploiting information gathered from failure investigations. This study introduces a forensic approach in civil engineering with the aim of overcoming this weakness and generating knowledge for failure structure modeling. By using conceptual graphs, a failure model is created that can structure the failure information to help the reader to visualize the failure process and the factors that led to the failure. Next, the inference mechanism can be used to derive knowledge from previous failures. A case study of dam failure caused by heavy rain illustrates this approach.

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