Looking for Analogies in Structural Safety Management through Connectionist Associative Memories

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Abstract *This paper describes the first successful achievements of an experimental application of connectionist hashed associative memories for realising analogical reasoning.*
The application field is the management of structural safety, where analogical reasoning is used to retrieve, given the qualitative description of the state of a structure, the closest-matching cases stored in a case base, which can help safety managers to interpret the current situation.
This work extends the use of Greene's associative memories by proposing a complex data structure and a compositional algorithm able to access the case base through structured keywords.

1. Introduction

[…]

2. The context: a knowledge-based system for the management of dam safety

[…]

3. The problem: taking advantage of past experts' evaluations

[…]

4. A viable solution: associative memories and analogical reasoning

[…]

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5. A working solution: a software environment for implementing analogical reasoning

[…]

6. An example

[…]

7. Final remarks

[…]

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