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Excerpt of the paper

A family of software components to deliver solutions for the interpretation of monitoring data

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Abstract. In this paper we summarize the results of our efforts, during the last ten years, to apply artificial intelligence techniques to the interpretation of engineering monitoring data. These efforts led us to create a set of software components which can be adapted to develop *real-world* applications to face specific customers' requirements, and to deploy several systems for the on-line interpretation of data coming from automatic monitoring systems of large dams, monuments, and landslides.

1. Introduction and History

Ten years ago our group started applying AI techniques to improve the ability of automatic systems to provide engineering interpretations of data streams coming from monitored structures. In the following years some applications were developed and are now in service. They range from monitoring of dams to monuments, and finally the same set of concepts and software components was applied to landslides. During the various developments, we moved, with some success, from applied research to the delivery of industrial solutions for our clients.

This led us to acquire knowledge and experience and to create a set of software components collectively called MISTRAL which can be adapted to develop a particular solution for a specific client.

The aim of this paper is to provide an overview of the existing set of components, recall the conceptual structure and the behavior of the system[1] and give quantitative data and qualitative comments about the results gained until now.

2. Software Components, Solutions and Enabling Technologies

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[1] we do not mean to deal here with the details of our interpretation systems, but we provide references to other publications that are more concerned with modeling techniques and implementation issues

3. Delivered Solutions

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4. System Overview and Underlying Concepts

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5. Quantitative Results: Report from a Specific Case

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6. Impact on the Organization

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7. Future Developments

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References

1. Salvaneschi, P., Cadei, M., Lazzari, M.: Applying AI to structural safety monitoring and evaluation. IEEE Expert 11(4) (1996) 24-34
2. Lazzari, M., Salvaneschi, P., Brembilla, L.: Looking for analogies in structural safety management through connectionist associative memories. IEEE International Workshop on Neural Networks for Identification, Control, Robotics, and Signal/Image Processing (NICROSP '96), Venezia, Italy, (1996) 392-400
3. Brembilla, L., Lazzari, M., Salvaneschi, P.: Structural monitoring through neural nets. Second Workshop of the European Group for Structural Engineering Applications of Artificial Intelligence (EGSEAAI '95), Bergamo, Italy (1995) 91-92
4. Lazzari, M., Salvaneschi, P., Ruggeri, G., Mazzà, G.: Information Systems for Dam Safety: Evolution through Artificial Intelligence. Engineering Intelligent Systems 6(1) (1998) 57-63
5. Lancini, S., Lazzari, M., Masera, A., Salvaneschi, P.: Diagnosing Ancient Monuments with Expert Software. Structural Engineering International 7(4) (1997) 288-291
6. Lazzari, M., Salvaneschi, P.: Integrating Geographic Information Systems and Artificial Intelligence for Landslide Hazard Monitoring. Cahiers du Centre Europeen de Geodinamique et de Seismologie. Walferdange, Luxembourg (to appear)
7. Garrett, J.H., Smith, I.F.C.: AI Applications in Structural/Construction Engineering. IEEE Expert 11(3) (1996) 20-22