

## **Workshop on Deep Underground Engineering and Data Mining**

**School of Engineering, Porto, Portugal, September 28, 2019**

**Room Prof. Joaquim Sarmiento (DEC, G 180, 1st floor, building G)**

### **Provisional Program**

In each section other contributions from the audience can be presented. Contributions not planned in the program cannot exceed 15 minutes.

#### **A. GENERAL INTRODUCTION (14.00-15.30)**

- **Deep Underground Engineering. Challenges.** L.R. Sousa (Portugal & China)
- **Application of Data Mining Techniques in the Development of Geomechanical Models for Venda Nova II hydroelectric Scheme.** T. Miranda (Portugal)
- **Risk Analysis During Tunnel Construction Using Bayesian Networks: Porto Metro Case Study.** R.L. Sousa (USA), H. Einstein (USA), Karim Karam (Oman).
- **Discussion.** Moderators: L.R. Sousa (Portugal & China) and Tiago Miranda (Portugal).

15.30-16.00 **Coffee break**

#### **B. MINING PROCESSES (16.00-17.00)**

- **Analytics over Multi-Sensor Time Series Data: A Case Study on Prediction of Mining Hazards.** A. Janusz (Poland), D. Slezak (Poland).
- **Rockburst Laboratory Tests Database and the Development of Rockburst Risk Indexes.** L.R. Sousa (Portugal & China), T. Miranda (Portugal), Roohollah Faradonbeh (Australia), and Zhu Gualong (UAE).
- **Discussion.** Moderator: Andrzej Janusz (Poland).

#### **C. CASE STUDIES (17.00-18.30)**

- **Salamonde II Powerhouse Complex. Geomechanical Characterization and modelling.** Marisa Pinheiro (Portugal), Tiago Miranda (Portugal), Luís Lamas (Portugal).
- **Characterization of the Rock Mass Formations of an Underground Laboratory in USA by using Data Mining Techniques.** L.R. Sousa (Portugal), T. Miranda (Portugal), R.L. Sousa (USA).
- **Use of Artificial Intelligence Techniques in Tunnel Maintenance.** L.R. Sousa (Portugal), R.L. Sousa (USA), C. Silva (Portugal).
- **Discussion and Conclusion.** Moderator: Tiago Miranda (Portugal)