Machine Learning for Multimodal Dialogue Management

Olivier Pietquin

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• **Problems:**
  - Robustness: Error prone:
    - ASR, NLU, NLG, TTS,...,
    - Dialogue Management
  - Task-dependence
  - Hard to re-use

• **Proposed Solution:**
  - Machine Learning
  - Statistical modelling
  - Data Driven Solutions
Addressed Challenges:

- Learning applied to **dialogue management** including use of MDP and POMDP-based dialogue controllers,
- **Scalability** to "industrial size" applications
- Statistical processing of **user inputs** to extract semantic info
- Use **dialogue context** to improve multimodal input processing
- Bootstrap and rapid training of **language models**
- Statistical **natural language generation**
- Statistical **User modelling**
- **Evaluation and data collection** methodologies
- **Multilinguality and multimodality**
Olivier Pietquin (Supélec, France)
olivier.pietquin@supelec.fr

Oliver Lemon (University of Edinburgh, UK)
olemon@inf.ed.ac.uk