Call 2016 Draft Topics & Keywords

In the **Call 2016**, to be published in October, two new and hot topics are addressed, namely *Lifelong Learning for Intelligent Systems* and *Visual Analytics for Decision Making under Uncertainty* .

The following topic keywords are given as illustration only. The CHIST-ERA Conference 2016 in Vienna, June 8-10, brings together scientists and CHIST-ERA representatives in order to identify and formulate promising scientific and technological challenges at the frontier of research with a view to refine the scientific content of the call. The conference is open to the research community. The conference registration website will be open shortly.

CHIST-ERA Conference 2016: http://conference2016.chistera.eu [1]

1. Lifelong Learning for Intelligent Systems

The aim is to study the learning of intelligent systems, such as robots or intelligent information processing software systems, outside of the laboratory environment where the initial training took place, and to design systems which can efficiently learn from interaction with users and improve themselves with minimal supervision. This requires enhanced knowledge models and innovative techniques to capture how past knowledge can be superseded by new one, to limit the need to access and process again the initial training data, and to take into account the interplay of user feedback with the system output. Such models and techniques can be experimented in an objective and reproducible way by simulating users with software oracles having access to reference data.

Keywords:

- Developmental robotics, incremental learning, online learning, never-ending learning
- Active learning, learning by imitation, learning by observation, reinforcement learning
- Intelligent control, educating robots, continuous training for robots, serious games for robots

2. Visual Analytics for Decision Making under Uncertainty

One central challenge concerning Big Data is to understand their reliability, scope, and accuracy, and to be able to communicate these important aspects to users in an intuitive manner, in order to support trusted exploration, modelling and decision making. This is a critical multidisciplinary and multifaceted challenge that stretches across the computational and related sciences, spanning discrete data (e.g. customer information, e-health records)

and continuous data (e.g. from simulations of air pollution dispersal, medical images).

Visual analytics aims to support data analysis and decision making through the power of data visualization coupled with user- interaction. The resulting visual and analytic tools will, for instance, require uncertainty analysis of ensemble data, sensitivity analysis of input-output models, and supported decision making that will allow expert users to understand the reliability and conflicts inherent in the analysis and the associated risks involved in subsequent decision making.

European research to date has focussed more on theoretical issues than real-world applications. It is now time to broaden this work, to provide a more comprehensive and integrated approach to modelling, visualisation and user interaction. This could include research into user-centric multidisciplinary approaches, tools and methodologies to enable the application of sophisticated analysis techniques to large datasets to quickly develop and explore interaction, visualization, and data-exploration techniques in order to provide simple, intuitive interfaces for real use cases.

Keywords:

- Interactive Visualization, Information Visualization
- Visual Data Analysis, Uncertainty Analysis and Visualization
- Uncertainty in Model Building and Use
- Visual Parameter Space Exploration, Visual Simulation Optimization, Visual Data Science for Big Data
- Informed Decision Making, Risk Handling through Visual Computing

Attachment	**Size**
CHIST-ERA Call 2016 - Topics Flyer.pdf[2]	591.31 KB

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Administration

Links:
[1] http://conference2016.chistera.eu
[2] http://www.chistera.eu/sites/chistera.eu/files/CHIST-ERA%20Call%202016%20-%20Topics%20Flyer.pdf