European Coordinated Research on Long-Term ICT and ICT-Based Challenges

Call 2019 Draft Topics

The CHIST-ERA ERA-NET is a consortium of research funding organisations supporting joint transnational research on multidisciplinary ICT and ICT-based challenges with the potential to lead to significant breakthroughs. The consortium is itself supported by the European Union's Future and Emerging Technologies programme (FET). In the Call 2019, to be published in October 2019, two new and emerging topics are addressed.

Explainable Machine Learning-based Artificial Intelligence

Machine learning algorithms, especially deep neural networks, have become very popular in a large variety of applications. These algorithms can learn from examples to generalize classification or regression tasks and successfully apply the learned models to unknown data. Usually, these algorithms transfer input data into abstract representations that are highly effective but difficult to understand for humans, and are considered as 'black boxes'. Hence, in most cases, neither the algorithms nor the researchers are able to explain how and why a certain prediction has been made. However, for many applications, it is essential that detailed information on the prediction is given to users so that they can understand the decisions that are derived from it. This is important for users to trust the decisions made by the system and to better use them. The objective of research on this topic is to make machine learning algorithms explainable, thereby reducing vulnerability and adding transparency by giving users detailed information why systems have arrived at a particular decision.

Application sectors: All application sectors of machine learning such as healthcare, bioinformatics, multimedia, linguistics, human computer interaction, machine translation, autonomous vehicles, etc.

Keywords: Artificial intelligence; machine learning; deep learning; explainability; transparency; accountability

Novel Computational Approaches for Environmental Sustainability

Our natural environment is a highly complex system. In order to anticipate the effects of concrete actions on the Earth's ecosystems and climate and to manage the available resources in a provably sustainable way, it is essential to understand and precisely model them. While there has been significant progress in that direction over the last decades, there is still a need for more data with a better coverage and higher spatial and temporal resolutions, for improved integration of heterogeneous data into coherent models, and more generally for enhanced models and simulations. For that purpose, novel approaches to big data collection and curation, e.g. based on crowdsourcing, and to model development, e.g. based on statistics and machine learning, potentially leading to new applications, should be developed.

Application sectors: Environmental sustainability; biodiversity; climate; renewable energy; public health; public policies; green industry

Keywords: Earth System Models; model creation; model fitting; model tuning; model evaluation; model inter-comparison; uncertainty quantification; statistical methods; machine learning; simulation; big data; data integration; data curation; data quality; data visualisation; crowdsourcing

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CHIST-ERA Conference 2019

June 11-13, Tallinn, Estonia

The *CHIST-ERA Conference 2019* in Tallinn (Estonia), June 11-13, brings together prominent scientists and representatives of CHIST-ERA in order to identify and formulate promising scientific and technological challenges at the frontier of research with a view to refine the contours of the call topics.

Participate in the definition of the Call 2019

In addition to introductory keynote talks by internationally renowned scientists, the conference proposes facilitated breakout sessions to brainstorm on the call content. This event represents a unique opportunity for the scientific community to participate in scoping the call topics and to network with potential partners.

Info and registration:
http://www.chistera.eu/conference2019-programme-overview

Call Information

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