

# Preface

Without any doubt, the interest in different techniques, tools, and models of the field traditionally known as artificial intelligence has exploded during the past few years. With more than 60 years of history, and a clearly interdisciplinary approach, artificial intelligence integrates as a discipline different approaches that try to simulate or reproduce behaviors or models that we call intelligent, cognitive, or rational. Among them, we can highlight functions like learning, reasoning, or language understanding.

Among the many areas of work that integrate the field of artificial intelligence, machine learning and natural language processing play an especially relevant role. Gartner recently published (October 2016) a report on the Top 10 Technology Trends for 2017. Within the list of key trends, “AI and Advanced Machine Learning” occupies the first place. It is worth noting that the main adjective used to describe these trends is intelligent: “AI and machine learning have reached a critical tipping point and will increasingly augment and extend virtually every technology enabled service, thing or application. Creating intelligent systems that learn, adapt and potentially act autonomously rather than simply execute predefined instructions is the primary battleground for technology vendors throughout at least 2020.”

Intelligent Apps (including virtual personal assistants) and intelligent things (robots, drones and autonomous vehicles) occupy positions number 2 and 3, respectively. Curiously enough, trend number 7 is for conversational systems: “... systems [that] shift from a model where people adapt to computers to one where the computer hears and adapts to a person’s desired outcome.”

At the European level, our multilinguality represents both a challenge and an opportunity. An outstanding group of researchers and industry leaders have promoted the “Strategic Research and Innovation Agenda for the Multilingual Digital Single Market”: *“The integration of the unified and connected Digital Single Market must address our languages: The Digital Single Market is a multilingual challenge! Our treasured multilingualism, one of the cultural cornerstones of Europe and what it means to be and to feel European, is also one of the main obstacles of a truly connected, language-crossing Digital Single Market. The European Language Technology community –including research, development, innovation and other relevant stakeholders– is committed to provide the technologies to achieve this goal.”*

As a representative outcome of this trend, the Spanish government has implemented a plan to promote language technologies with an estimated investment of over 70 million euros.

In conclusion, language technologies are playing a crucial role inside a complex and complete technological ecosystem that integrates fields like cloud computing, Internet of Things, data science and big data, business intelligence, machine learning, and many other subfields in artificial intelligence.

In 2015, a group of professors and researchers at the University of Seville faced the challenge to convene a workshop where experts from different countries could meet to

analyze emerging trends in the field of language technology so that they could also envision the pace for the future.

The event took place under the name First Workshop on the Future and Emerging Trends in Language Technology (FETLT 2015). This workshop was organized around a series of keynote speakers: Steve Young (University of Cambridge), Sebastian Möller (TU Berlin), Pierre-Paul Sondag (European Commission). Four coordinators of active European-funded research projects gave specialized presentations: Núria Bel (Pompeu Fabra University), Asunción Gómez-Pérez (Technical University of Madrid), Giuseppe Riccardi (University of Trento), and Steve Renals (University of Edinburgh).

Several other researchers could also share their results in a peer-reviewed process that resulted in 10 papers been presented at the workshop. All conferences and papers are published by Springer in the series *Lecture Notes in Artificial Intelligence*, volume 9577.

After the organization of the first edition of FETLT 2015 the Workshop “Future and Emerging Trends in Language Technology, Machine Learning and Big Data 2016” became a reality.

The strategic objectives of the 2016 edition were to facilitate the dynamics between research groups through the presentation of several keynote speakers, the organization of a specific workshop on the key areas of future research, and the development and innovation priorities in language technology, with special attention to machine learning and big data. The workshop hosted the presentation of peer-reviewed items. The event had a scientific committee of more than 60 experts, worldwide experts from both academia and private industry. The Andalusian Agency of Knowledge also showed interest in the event and in the organization of a specific session to guide researchers on the preparation of grant proposals and the presentation of different funding possibilities at national and international levels. This volume includes the articles presented by the keynote speakers as well as the contributed papers accepted by the scientific committee.

As conference chair, I would like to thank all the attendees of the workshop, the authors of the papers, and the keynote speakers for their participation in this event. And finally, the Scientific and Organizing Committees played the crucial role of making this conference a nice opportunity to meet and network in a highly motivating environment.

Future and Emerging Trends in Language Technology.

Machine Learning and Big Data

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Selected Papers

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