

EAIH: Where is the edge between artificial intelligence and human beings?

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Abstract— The objective of this special session is to analyze the *modus operandi* of the intelligent systems from the point of view of the limitations between the machine and the human. In case of creating artificial intelligence like human intelligence, where will be the edge between human being and the intelligent hardware and software with artificial intellect? In this topic we present the following reflections: What do we think about systems that think? Could be intelligent systems smartest that people? Could be intelligent machines an extension of our brains?

Keywords- *big data; business analytics; value; industry; empirical study.*

I. INTRODUCTION

For more than fifty years, we have heard differing views about the true meaning of artificial intelligence. When a machine pays attention to what it knows and what the user knows, we will immediately call it a "thinking machine", because it will closely approximate what we do. But the real question is whether machines can think like people. When Turing invented the first theoretical device, he confessed that he was attempting to copy "a man in the process of computing a real number" and its fundamental components such as emotional intelligence, mathematical intelligence, spatial reasoning, etc. According to Turing test of artificial intelligence, a computer is deemed to have artificial intelligence if it can mimic human responses under specific conditions [1]. In this test, if the human being conducting the test is unable to consistently determine whether an answer has been given by a computer or by another human being, then the computer is considered to have "passed" the test.

Nowadays studying the human brain is still our best source of ideas about thinking machines. Cognitive scientists have discovered functions that are essential to genuine thinking as we know it, much of which has not materialized yet. The main reason behind their intellect is the fact that they can access unlimited information and reflect over all at any instant [2]. We can love, and hate our actions at the same time. This all affects our decisions and actions drastically. The exercising common sense in making decisions and being able to ask meaningful questions are, so far, the prerogative of humans. Merging Intuition, emotion, empathy, experience

and cultural background, and using all of these to ask a relevant question and to draw conclusions by combining seemingly unrelated facts and principles, are trademarks of human thinking, not yet shared by machines. Intelligent systems can come up with a very good knowledge to tell just in time. Although sometimes it doesn't know what it is saying, it can simply find the best knowledge to answer [3].

Our society is currently moving fast towards new rules, regulations, laws, investment vehicles, etc. These and similar trends are visibly moving us towards more algorithmic and logical modes of tackling problems, often at the expense of common sense [4]. When we receive thousands of alarms in an industrial plant, I would certainly appreciate the help of an intelligent system. Technology enables machines providing access to essential resources, power, speed and communications to support clinical decision systems for medical diagnosis, to use robots in industry to do dangerous work for humans, to develop fuzzy logic controllers for automatic gearboxes in automobiles, to use heuristic search in telecommunications companies to manage their workforces, etc.

II. PAPERS ACCEPTED IN THE SPECIAL SESSION

This special session's main aim is to present the work conducted by different groups to expand current knowledge of intelligent systems and get experience in intelligent machines development. After the review process, three stand-alone articles were accepted in the session.

In the first paper, "Intelligent Information System as a tool to reach unapproachable goals for inspectors" by Juan Guerrero, Enrique Personal, Antonio Parejo, Félix Biscarri, Jesús Biscarri, and Carlos León, authors present the application of ICT to provide the possibility of increasing intelligent capabilities in an information system to detect nNon-Technical Losses (NTLs) represent the non-billed energy due to faults or illegal manipulations in customer facilities. The objective of the Midas project is the detection of NTL through the application of computational intelligence over the information stored in utility company databases. This project has several research lines. Some of them are pattern recognition, expert systems, big data and High Performance Computing (HPC). The paper proposes module, which use statistical techniques to make patterns of correct

consumption. This module is integrated with a rule-based expert system with other modules as: text mining module and data warehousing module. The correct consumption patterns are generated using rules, which will be used in rule-based expert system.

The second paper titled "Semantic Reasoning Method to Troubleshoot in the Industrial Domain" by Antonio Martín, Mauricio Burbano, Iñigo Monedero, Joaquín Luque, and Carlos León, authors propose a comprehensive approach for discovering information objects in large digital repositories based on analysis of recorded semantic metadata and the application of Case Based Reasoning technique. They suggest a conceptual architecture for a semantic search engine. The paper describes semantic interoperability problems and presents an intelligent architecture to address them. The work differs from related projects in that we build ontology-based contextual profiles and we introduce an approaches used metadata-based in ontology search and expert system technologies.

In the third paper, "Forecasting the Needs of Users and Systems, a New Approach to Web Service Mining" by Juan I. Guerrero, Enrique Personal, Antonio Parejo, Antonio García and Carlos León, authors argue that technologies include the integration of heterogeneous systems which perform different task in the Smart Grid ecosystems. It is important that the integrated system can assimilate the new systems without a complex implementations and deployments. The proposed framework forecasts the needs of new systems make available new Web Services (WSs) to users and systems. The standards related with Smart Grids include specifications for different Web Service Architectures. Thus, the proposed framework is based on Web Service Mining, using different modules, including semantic engine and analytic module, with time series classification and clustering. Finally, the proposed framework was applied in Smart Business Park (SBP), creating new WSs based on the analysis of Web Services activity information, forecasting the needs of users or/and systems.

III. CONCLUSION

Thinking" is a word we are applying with no discipline whatsoever to a huge variety of behaviors. When we say, "machines that think", we really mean: "machines that think

like people". Systems execute tasks, specified and programmed by humans. There are many different ways to simulate thinking: trigger events, process things, take decisions, make choices, and perform many, but not all, other aspects of thinking. We can teach a machine to track an algorithm and to perform a sequence of operations, which follow logically from each other. It can do so faster and more accurately than any human.

The question is could we create systems that go further and act without human supervision? Intelligence, artificial or otherwise, requires knowing why things happen, what emotions they stir up, and being able to predict possible consequences of actions. Human mind can distinguish between the right and the wrong, we can foresee future outcomes in a way no artificial mind can. These variables do not exist for an artificial one. Nowadays Artificial Intelligence can't do any of that. Machines cannot think and they are not going to think any time soon. Thinking and automated spelling correction programs are not the same thing.

ACKNOWLEDGMENT

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REFERENCES

- [1] E.G. Daylight et al., "The Dawn of Software Engineering: From Turing to Dijkstra", Editor: Lonely Scholar, 2012.
- [2] M.J. Guitton, "Artificial vs. enhanced intelligence: Computer or human behavior?", *Computers in Human Behavior*, Volume 31, Pages 332-333, 2014.
- [3] J.M.L. Asensio, J. Peralta, R. Arrabales, M. Gonzalez Bedia et al. "Artificial Intelligence approaches for the generation and assessment of believable human-like behaviour in virtual characters", *Expert Systems with Applications*, Volume 41, Issue 16, 15 Pages 7281-7290, 2014.
- [4] B. Nag, "Intelligent Systems in Operations: Methods, Models and Applications in the Supply Chain", Towson University, USA, 2010