Mother Tongue?

Ubbo Visser

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Dear readers,

or should it be “Liebe Leserinnen und Leser” as we did the past 27 years? Seriously, this editorial might be the first editorial written in english in the history of this journal. The question is: do we really need this? Why don’t we stick with what we had be-

fore? Why do we have to do what everybody else does? I am sure you find a lot of reasons why we should keep our German language active in this journal. You can refer to our neighbors, the French, who are a little more conservative with regard to keeping the mother language in their everyday business. May be we should do the same? So, what makes me think otherwise?

When I read the contributions of this new special issue on AI & Agriculture, I noticed that there is not a single article written in German. As a consequence, I thought that an english written editorial would be more appropriate. This is also in line with our policy to open up to international readers. Our publisher Springer has confirmed that more and more papers are downloaded from outside the German speaking countries. So, maybe this step was long overdue.

Our guest editor Andreas Dengel introduces us readers into the topic of this special issue and I don’t want to be repetitive here. However, having worked in the area of AI

& Agriculture myself during the late 80s and early 90s (on rule-based systems for the application of pesticides in crops), I allow myself to say some words about AI technologies that emerged in agriculture over the years. The number of farms are going down—at least in Europe and in the US ($\approx 26\%$ in Europe between 2000–2010 according to the European Commission’s eurostat report about rural development from 2012; and $\approx 10\%$ less farms over the past 15 years according to the USDA report from 2/2013). Meanwhile, the number of people to feed is going up, thus, technology became an important factor in farming. A modern farmer nowadays is an entrepreneur who needs to have deeper knowledge than ever before about pesticides, crops, animal care, machinery etc. to make a living. Bookkeeping, paperwork and decent computer skills are as important as knowing how to weld and build a wall in the shed. In short: farming has changed dramatically from the last generation to the current and modern computer technology including AI methods now belong to the everyday tools of the farmers.

The special issue part of this KI edition is complemented with two additional interviews: Alexander Waibel gives his opinion about technology transfer between academia and industry in current times. KI then interviewed the ECCAI President Patrick Doherty and asked about the current topics that are discussed and the role ECCAI plays with regard to AI and Robotics.

And now it is time to wish you a pleasant reading with the new issue of *Künstliche Intelligenz*—may be we need to change the name of the journal to an english title too? Of course not!

Herzlichst, Ihr

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Forthcoming Special Issues

1 Transfer Learning

Machine learning research for a long time has focused on tabula rasa approaches, i.e. learning techniques that start from scratch without exploiting the potential of prior experience gained on other tasks. Transfer learning attempts to tap into this potential, viewing learning as a life-long process where everything learned can be used to speed up and improve future learning performance. In this context, past experience can be in terms of the knowledge and skills gained through learning, as well as the learning process itself.

This special issue will cover all aspects of transfer learning, including but not limited to:

- Knowledge, task, and state-space representation
- Inter-task mappings of states and actions
- Source task selection
- Evaluation methods
- Reward shaping
- Meta learning
- Life-long learning
- Applications, e.g. robotics.

We are seeking a wide range of contribution formats for the special issue, e.g. technical articles, surveys, interviews, project descriptions, and lab portraits. To suggest a contribution, please contact as soon as possible:

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2 Space Robotics

While Space Exploration may be considered anything but dull, it certainly is very dangerous. Expanding our knowledge on the solar system to look for clues to such fundamental questions as the origins of life, or a sustained human presence on anything other than earth may well be worth the risk. The involved costs for mitigating the risk of human space flight are prohibitive. Robotic missions, like the hugely successful Mars Exploration Rovers, have shown that Robotics as a sub-field of Artificial Intelligence can perform scientific exploration activities without human presence, and will play an even more prominent role in future mission scenarios. World wide technology research efforts are continuously expanded the capabilities of mobile robotic systems.

This special issue on ‘Space Robotics’ of the *Künstliche Intelligenz Journal* seeks to present a collection of research efforts, industry activities and other insights into this hugely interesting and versatile field of AI.

The topics of interest include, but are not limited to:

- Exploration systems and technologies
- Orbital servicing
- Human mission support
- Operations support
- System design/architecture/behavior

The *Künstliche Intelligenz Journal*, which is published and indexed by Springer, supports the following lists of formats: Technical contributions, research projects, discussions, dissertation abstracts, conference reports and book reviews.

If you are interested in contributing to this special issue, please contact one of the guest editors:

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3 Multi-agent Decision Making

Classical decision making is concerned with how rational agents make optimal decisions. In distributed decision making complex problems are divided into smaller ones and decisions are made in a distributed manner. Also, it often is the case that all involved decision makers are sharing—willingly or not—a global objective and that they are somewhat cooperative.

In general, this is not the case for multi-agent decision making which is concerned with self-interested agents pursuing their own objectives. Those objectives may be consistent but can just as well be completely contradicting; they

can be publicly known or private. As a consequence, good decisions no longer only depend on the respective agent's capabilities and the characteristics of the environment, but to a great extent on how other agents behave and on the interaction with them. In most settings these behaviors influence each other and that complicates matters further—new tools and techniques are needed.

This special issue will focus on multi-agent decision making. Topics of interest include but are not limited to:

- Logics for multi-agent systems
- Game theory and (computational) social choice
- Foundations of multi-agent systems
- Multi-agent planning and control
- Norms and social laws
- Argumentation and negotiation
- Decision theory

Possible contribution formats are technical articles, reports of research projects, dissertation summaries, book reviews, and conference reports.

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4 Re-integrating AI

Researchers in AI and Robotics have in common the desire to 'make robots intelligent', evidence of which can be traced back to the earliest AI systems. One major contribution of AI to Robotics is the model-centered approach, whereby intelligence is the result of reasoning in models of the world which can be changed to suit different environments, physical capabilities, and tasks. Dually, robots have contributed to the formulation and resolution of challenging issues in

AI, and are constantly eroding the unrealistic modeling abstractions underlying AI problem solving techniques. Forty-eight years after the first AI-driven robot, this special issue on 'Reintegrating AI' seeks to provide a fresh and up-to-date look at the opportunities, challenges and successes which lie at the intersection of AI and Robotics. Topics of interest include, but are not limited to:

- Integration of Path and Motion Planning with Task Planning
- Knowledge Representation and Reasoning for robots
- Qualitative representations for robots
- Semantic mapping and reasoning with semantic maps
- Hybrid continuous/discrete reasoning
- Constraint-based reasoning for robots
- Continuous planning and on-line problem solving for robots
- System-level AI for robots
- Knowledge acquisition and knowledge exchange between robots
- Reasoning with uncertain and inconsistent knowledge
- Experience-based learning for robots
- High-level reasoning for exploration

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