press release

ELLIS Alicante's Researcher Erik Derner receives Werner von Siemens Award 2023

- The award recognizes the PhD Thesis that best addresses Industry 4.0 Concept Topics.
- The work may find application in robotics and other industrial applications that require creating models of dynamic systems from data.

Alicante, 19 of March, 2024. – ELLIS Alicante is delighted to announce that **Dr. Erik Derner**, currently a postdoctoral researcher at ELLIS Alicante, has won the **Werner von Siemens Award 2023** in the category "The Best Thesis Addressing the **Industry 4.0** Concept Topics". Erik Derner's work presents a set of methods for teaching robots to learn and interact with their environment using less data than traditional methods. This approach has proven particularly useful in situations where collecting large amounts of data is a challenge, making it a practical solution for real-world applications.

The PhD thesis, entitled "Data-efficient methods for model learning and control in robotics", has been developed under the supervision of the distinguished Prof. Dr. Ing. Robert Babuška from the Czech Technical University in Prague.

Erik Derner's doctoral research proposes a new way to solve problems in learning models from data in robotics. He tested his idea with a moving robot and found that it could learn even from a small amount of data. This learning helped the robot perform tasks better, especially using a method called reinforcement learning. Normally, when robots learn from data, they might not fit the robot's physical limits well. However, Derner's approach takes into account what we already know about the robot, making the learning process more effective.

Knowledge of **mathematical models of dynamic systems** is crucial for a wide range of engineering and scientific disciplines. Models enable simulations, system behavior analysis, decision making and control algorithm design. Furthermore, they are interpretable, do not need a lot of data and can also be helpful to improve other methods such as reinforcement learning.

Dr. Nuria Oliver, Director of ELLIS Alicante and vice-president of ELLIS Europe commented on Erik's award: "Erik's groundbreaking work in robotics and his dedication to finding solutions to real-world problems exemplify the innovative and purpose-driven spirit we cultivate at ELLIS Alicante. We are immensely proud of his achievements and thrilled to see him recognized with the prestigious Siemens award". Erik is currently part of the competitive ELLIS Postdoctoral Program which aims to attract and retain the brightest young minds to pursue scientific careers in AI in Europe.

Dr. Derner stated upon receipt of the award last week: "I would like to contribute to the popularization of robotics and artificial intelligence and to spread

awareness on the ever-accelerating technological development as much more of an opportunity for society than a cause for concern".

Erik Derner's current research at ELLIS Alicante focuses on the social and ethical implications of the interaction between humans and Artificial Intelligence (AI). His work is addressing biases in conversational AI systems (chatbots), especially in underrepresented languages. With this approach, he aims to contribute to the development of more equitable and fair AI systems. Another goal of his work is to improve the security, privacy and reliability of generative AI systems. Part of Erik's scientific work is framed within RESUMAIS, the Centre of Scientific Excellence in Responsible AI of which ELLIS Alicante is a part, co-funded by Intel.

For more information about the research at ELLIS Alicante and Dr. Erik Derner's contributions, please visit https://ellisalicante.org.

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About ELLIS Alicante | www.ellisalicante.org/ia

ELLIS Alicante is a non-for-profit private research foundation focused on **ethical and responsible Artificial Intelligence (IA)** for social good. Hence, it is also known as the **Institute of Humanity-centric AI**. ELLIS Alicante aims to be an international reference in **AI research by and for people**, by focusing on three areas of fundamental research in the intersection between humans and AI: 1) **AI that understands us**; 2) **AI that interacts with us**; 3) **AI that we trust**.

ELLIS Alicante is part of the European network of excellence in Artificial Intelligence ELLIS (European Laboratory for Learning and Intelligent Systems - www.ellis.eu), being the only ELLIS unit dedicated exclusively to this area. ELLIS Alicante is the only ELLIS unit created from scratch, with the spirit of a scientific startup.

ELLIS Alicante was launched thanks to the vision, commitment, and generous financial support of the Generalitat Valenciana. It is also funded by other public and private institutions, including the Banc Sabadell Foundation, Balearia Foundation, Intel Corporation and Nippon Gases. The Foundation's work has won major awards including the 500k XPRIZE Pandemic Response Challenge by Cognizant (2021) and the Social Innovation Award (2022).

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