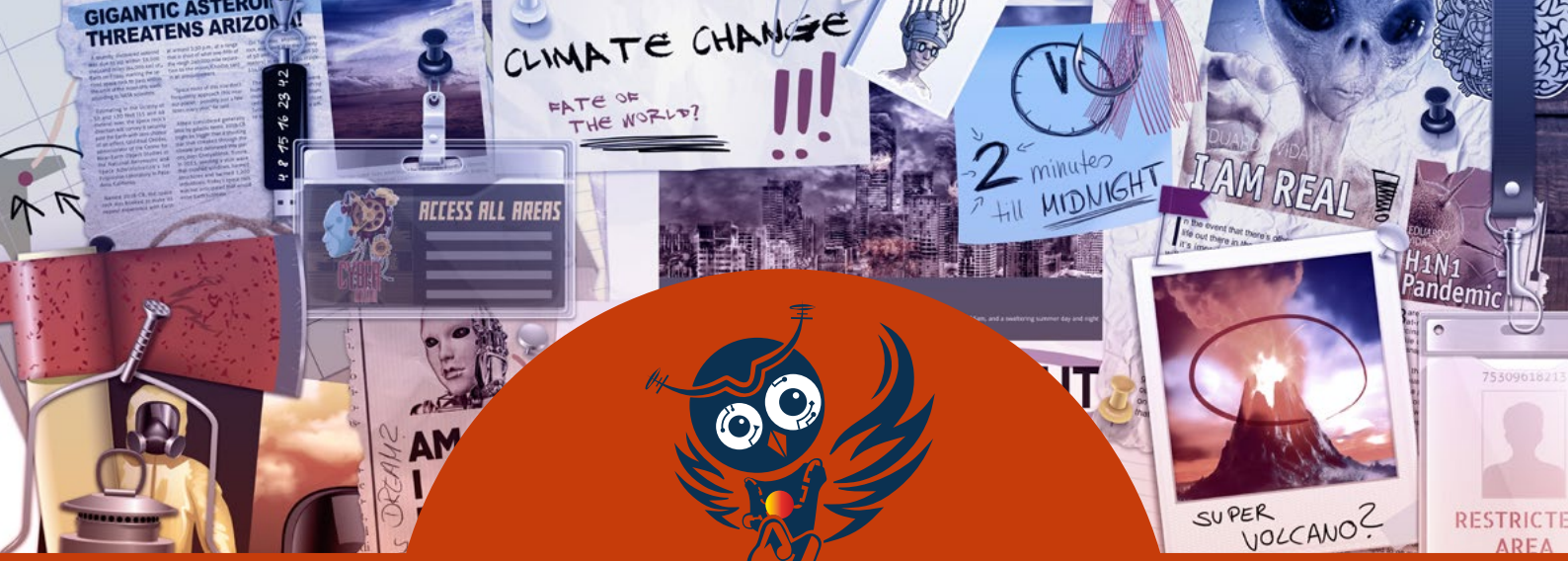

PROF. DR. UWE OHLER

BERLIN INSTITUTE FOR MEDICAL SYSTEMS BIOLOGY, MAX DELBRUCK CENTER

MAY 18th | 3:15 pm - 3:45 pm

CHARTING THE INNER WORLD -

HOW MACHINE LEARNING HAS TRANFORMED GENETICS

20 MIN TALK + Q&A | INTRODUCTORY AND OVERVIEW | ENGLISH

Sequencing of the human genome is one of the best known scientific achievements of the past decades. It is less known that all along, machine learning has played a major role in making sense of the genome: For over twenty years, ML has been used to locate genes, to predict their function, to find out how molecular networks break down in disease, and more.

I will explain how ML applications in the natural sciences have a very different quality from many other domains: The comparatively limited amount of (especially, labeled) data poses significant challenges and still requires domain expertise, especially for an understanding of the models and predictions. Notably, ML does here not merely reproduce or improve upon existing human skills, but is rather used to interpret new data and gain entirely new insights - to ultimately allow for targeted interventions, from congenital disorders in humans to photosynthesis in plants.

Uwe Ohler is Professor at the Max Delbrueck Center in Berlin, with a primary appointment in the Department of Biology and a secondary appointment in the Department of Computer Science at Humboldt University Berlin. After obtaining his Ph.D. in Computational Biology in Erlangen, Uwe lived in the US for more than a decade and followed his interests in gene regulation and applied machine learning at MIT & Duke University where he got tenured in 2011. He taught in the cross-departmental graduate program in Computational Biology & Bioinformatics, and was core faculty at the Duke Center for Systems Biology. During this time, he received fellowships from the Alfred P Sloan Foundation, as well as HFSP, NSF CAREER, and NIH Transformative Research awards before coming to Berlin in 2012.

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