ÖAW AUSTRIAN ACADEMY OF SCIENCES

ISTA Institute of Science and Technology Austria

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INVITATION TO THE SEVENTH TALK OF THE PUBLIC LECTURE SERIES
ÖAW – ISTA LECTURES

FROM MACHINE LEARNING TO AUTONOMOUS INTELLIGENCE

YANN LECUN
New York University & Meta

WELCOME

THOMAS HENZINGER
President, ISTA

ULRIKE DIEBOLD
Vice President, Austrian Academy of Sciences

MONDAY, SEPTEMBER 19, 2022, 05:00 P.M., CET (VIENNA)
ISTA, RAIFFEISEN LECTURE HALL,
AM CAMPUS 1, 3400 KLOSTERNEUBURG
PLEASE REGISTER HERE

ISTA and the Austrian Academy of Sciences have initiated a joint lecture series in 2016 aiming to bring to Austria speakers of the highest international standing active in fields that are of mutual interest to both institutions and to a wider public. The lecture series will be continued by a talk of Yann LeCun, Vice President and Chief AI Scientist at Meta and Silver Professor at NYU affiliated with the Courant Institute of Mathematical Sciences & the Center for Data Science.

Yann LeCun was the founding Director of FAIR and of the NYU Center for Data Science. He received an Engineering Diploma from ESIEE (Paris) and a PhD from Sorbonne Université. After a postdoc in Toronto he joined AT&T Bell Labs in 1988, and AT&T Labs in 1996 as Head of Image Processing Research. He joined NYU as a professor in 2003 and Meta/Facebook in 2013. His interests include AI machine learning, computer perception, robotics and computational neuroscience. He is the recipient of the 2018 ACM Turing Award (with Geoffrey Hinton and Yoshua Bengio) for „conceptual and engineering breakthroughs that have made deep neural networks a critical component of computing", a member of the National Academy of Sciences, the National Academy of Engineering, the French Académie des Sciences.

Abstract
How could machines learn as efficiently as humans and animals? How could machines learn to reason and plan? How could machines learn representations of percepts and action plans at multiple levels of abstraction, enabling them to reason, predict, and plan at multiple time horizons? I will propose a possible path towards autonomous intelligent agents, based on a new modular cognitive architecture and a somewhat new self-supervised training paradigm. The centerpiece of the proposed architecture is a configurable predictive world model that allows the agent to plan. Behavior and learning are driven by a set of differentiable intrinsic cost functions. The world model uses a new type of energy-based model architecture called H-JEPA (Hierarchical Joint Embedding Predictive Architecture). H-JEPA learns hierarchical abstract representations of the world that are simultaneously maximally informative and maximally predictable. The corresponding working paper is available *here*.

Free shuttle buses are provided to/from campus: The regular IST shuttle bus #142 will depart from U4 Heiligenstadt at 3:57 pm. An extra IST shuttle bus will depart from Schwedenplatz/night bus stop at 4 pm. The IST shuttle bus #142 returning to Vienna will depart at 6:58 pm and 7:28 p.m. The extra shuttle returning to Schwedenplatz will depart at 7:45 pm.