Il Pianeta delle **Macchine**

Evoluzioni e incroci tech tra nuove ingegnerie e nuove culture

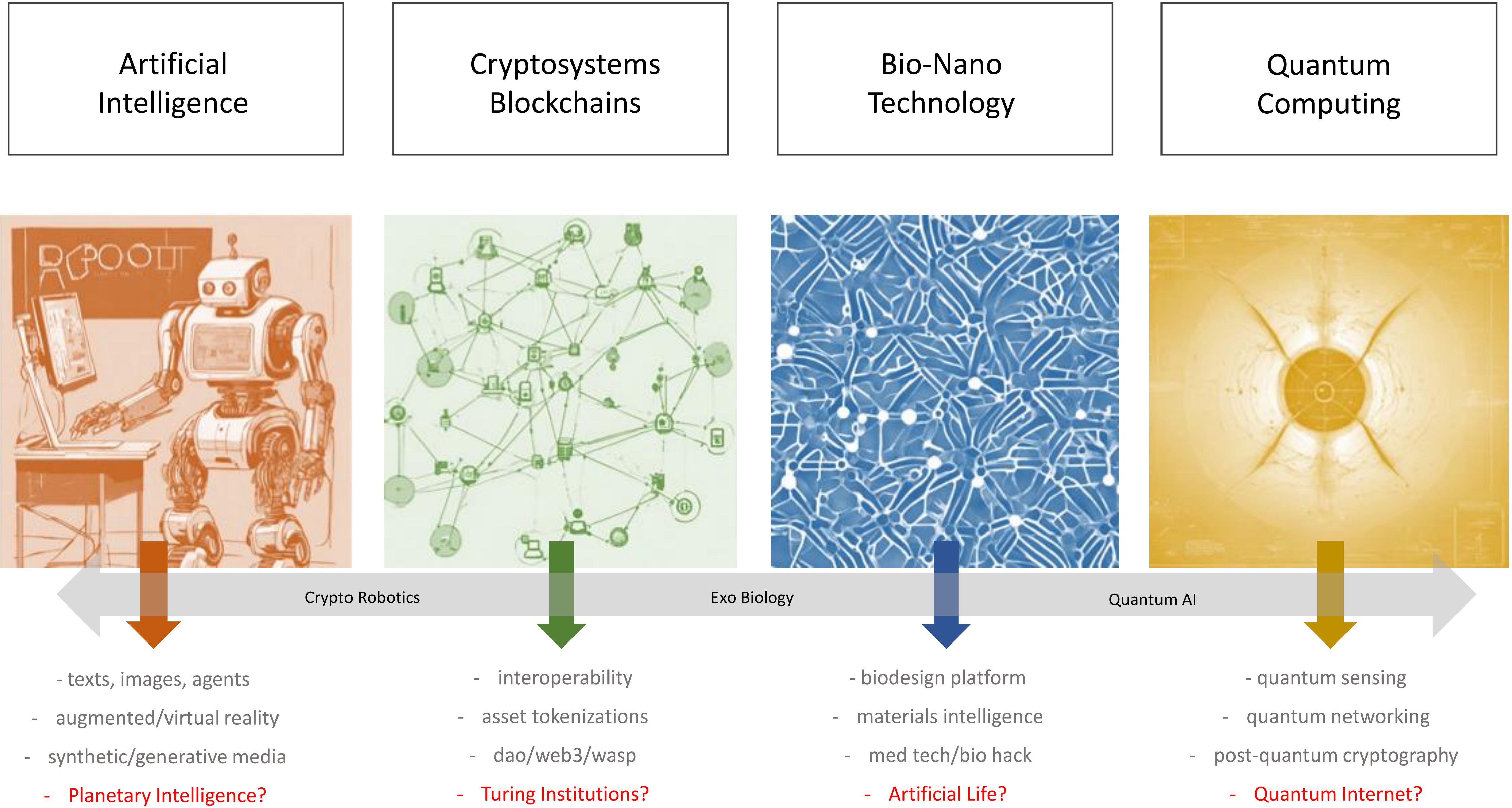
Cosimo Accoto

Tech Philosopher | Research Affiliate & Fellow (MIT) | Adjunct Professor (UNIMORE) | Startup Advisor & Instructor

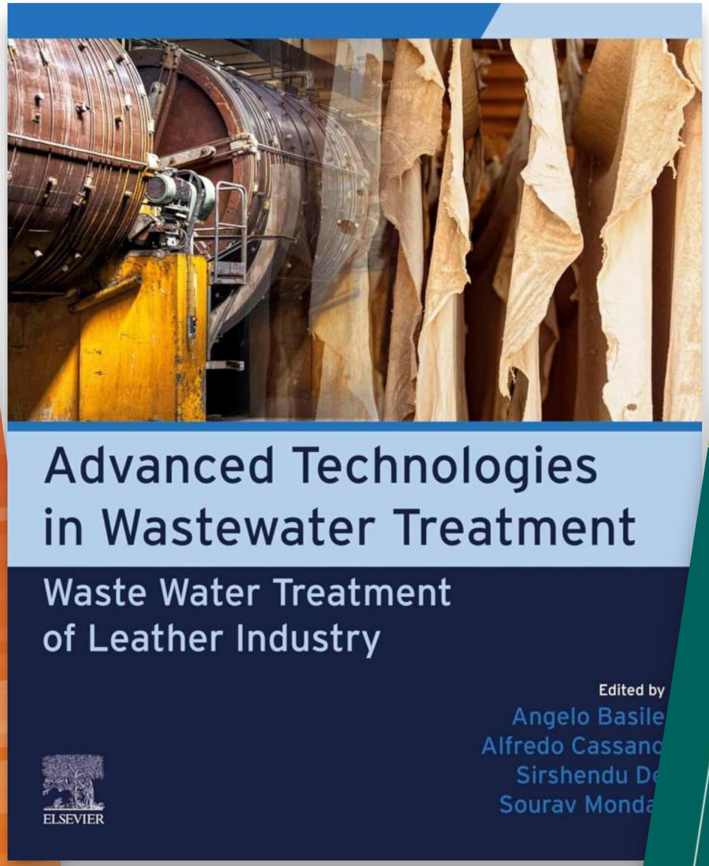

BostonDynamics
INTRODUCING
ATLAS 2
Marc
Raibert
Lex
Fridman
Donald Trump Interview | Lex Fridman Podcast #442
but at the en
weekend they se successful in politics.

From science to engineering

- ai-engineering
- quantum-engineering
- crypto-engineering
- space-engineering
- geo- engineering
- nano-engineering
- bio-engineering
- neuro-engineering
- …


Artificial Intelligence
Cryptosystems Blockchains
Bio-Nano Technology
Quantum Computing
Crypto Robotics
Exo Biology
Quantum AI
- texts, images, agents
- augmented/virtual reality
- synthetic/generative media
- Planetary Intelligence?
- interoperability
- asset tokenizations
- dao/web3/wasp
- Turing Institutions?
- biodesign platform
- materials intelligence
- med tech/bio hack
- Artificial Life?
- quantum sensing
- quantum networking
- post-quantum cryptography
- Quantum Internet?


Sreeram Kalarical Janardhanan
Luis A. Zugno Editors
Emerging Trends in Leather Science and Technology
Springer


Advanced Technologies in Wastewater Treatment
Waste Water Treatment of Leather Industry
Edited by
Angelo Basile
Alfredo Cassano
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Sourav Monda
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Sustainable Textiles: Production, Processing, Manufacturing & Chemistry
Subramanian Senthilkannan Muthu
Mukta Ramchandani
Vegan Alternatives for Leather
Springer

New Engineering
New Cultures

The Machine Economy

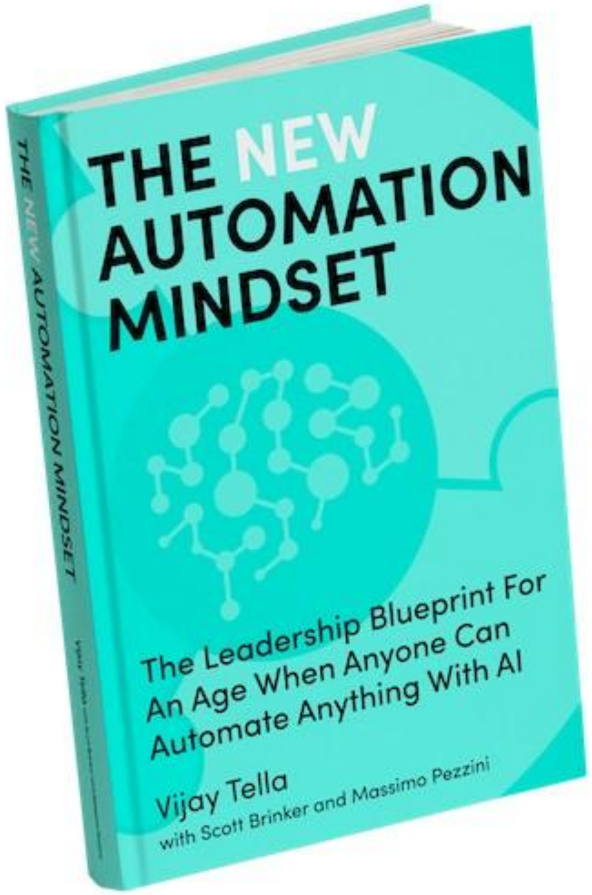
data, platforms, markets

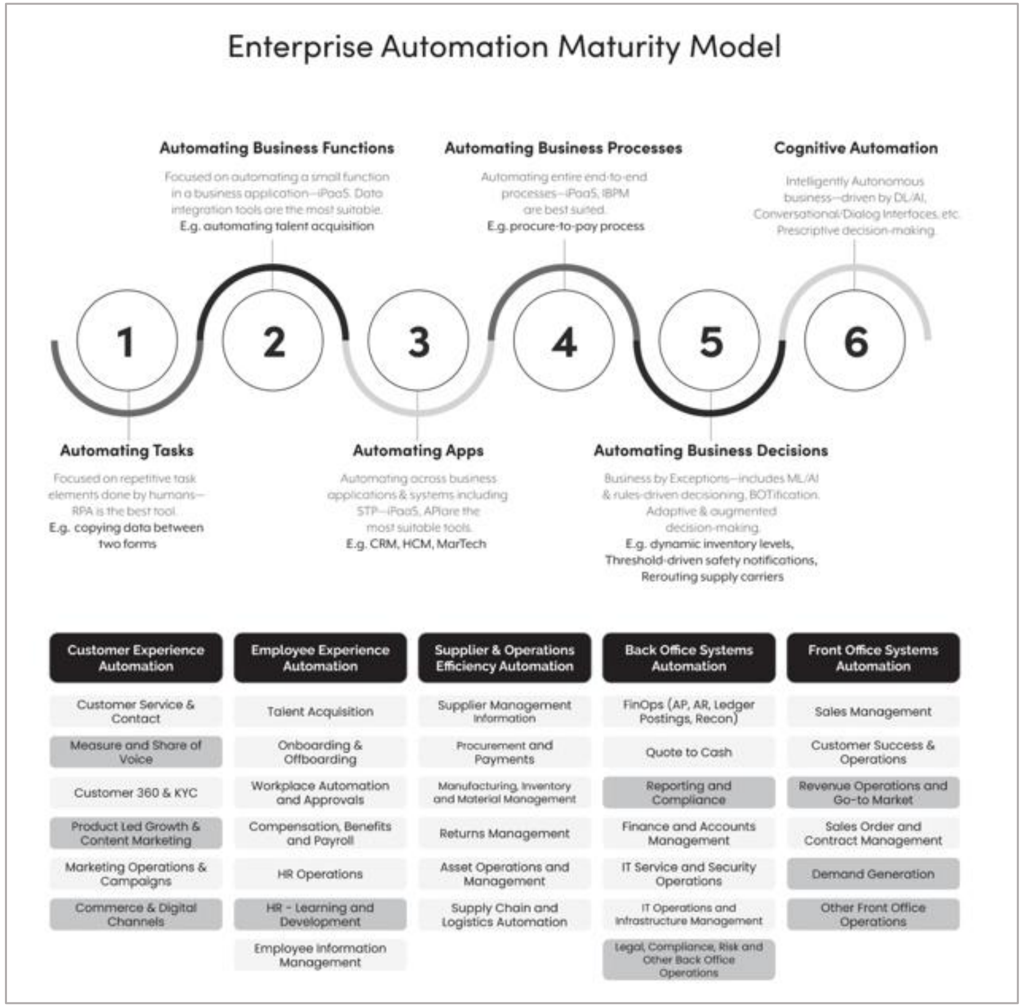
- automation is a mindset, not a skillset.

- it’s not only a machine (working), but a machinery (organizing). It refers to programs/algorithms as well as to protocols/platforms (dogs too)

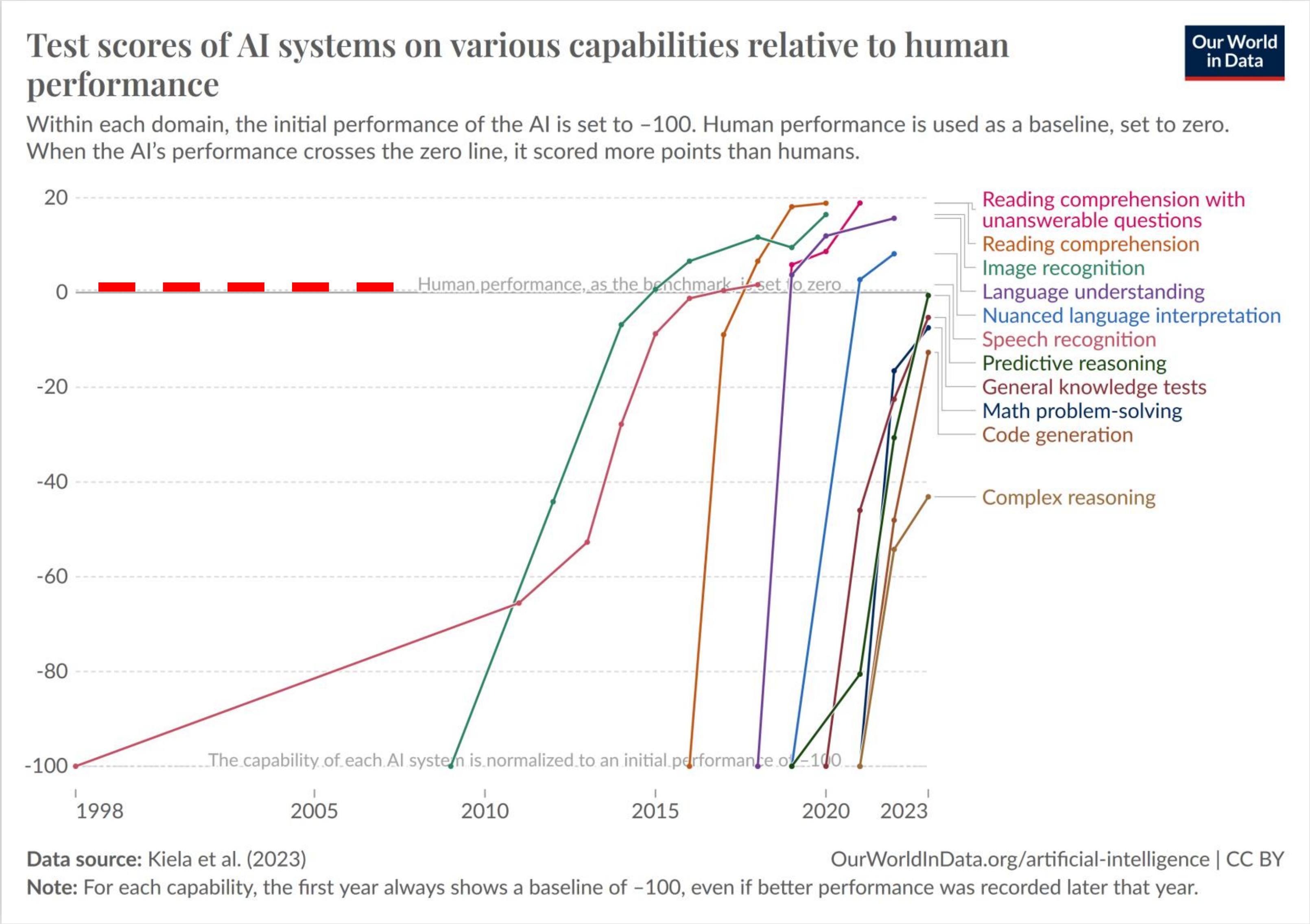
- artificial intelligence and machine automation both need data …

Automation-First Mindset





Humans vs machines (2014-2024)



… in leather industry

Heliyon

Volume 10, Issue 16, 30 August 2024, e35957

Research article

A multi-scale attention mechanism for detecting defects in leather fabrics

Hao Li [a], Yifan Liu [a], Huawei Xu [b], Ke Yang [a], Zhen Kang [a], Mengzhen Huang [a], Xia… Yuchen Zhao [a], Tongzhen Xing [c]

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https://doi.org/10.1016/j.heliyon.2024.e35957

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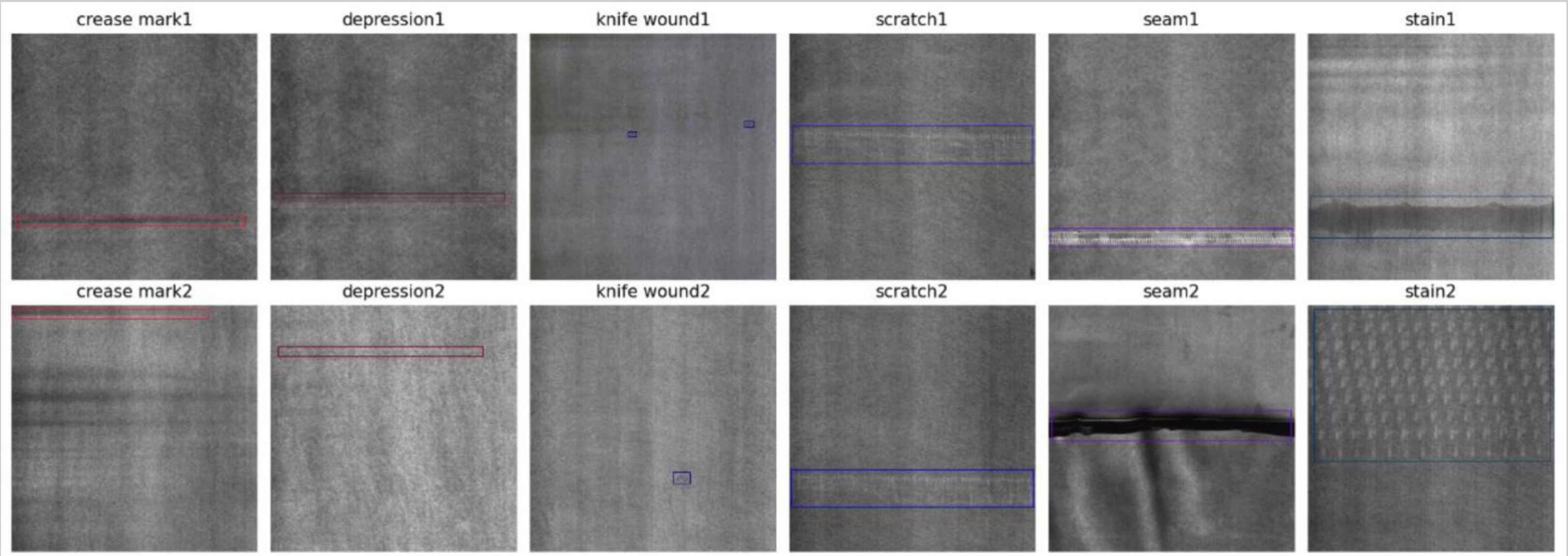
Abstract

Defect detection is critical to industrial quality control in leather production engineering. The various sizes and locations of defects in leather, as well as significant differences within the same class and indistinctive variations between different classes of defects, contribute to the complexity of the problem. To address this challenge, we propose a Multi-Layer Residual Convolutional Attention (MLRCA) approach. MLRCA enhances its ability to capture both intra-class and inter-class differences by enhancing the semantic feature representation in the backbone network. To improve multiscale fusion effects, we also incorporate the MLRCA module into the feature pyramid network (FPN) and propose a new multi-layer residual convolution attention feature pyramid network (ML-FPN). This approach enables more accurate identification of leather defects at a more detailed level by selectively capturing contextual information from different domains. We then implement the Side-Aware Boundary Localization (SABL) detection head, which



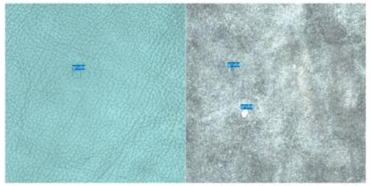


Figure 2. Example of an enlarged annotated image of grain (left) and flesh (right) leather sides showing a defect named grubs (larval damage).

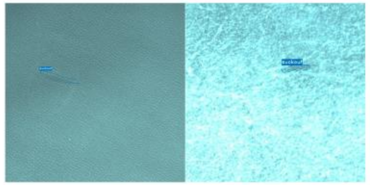
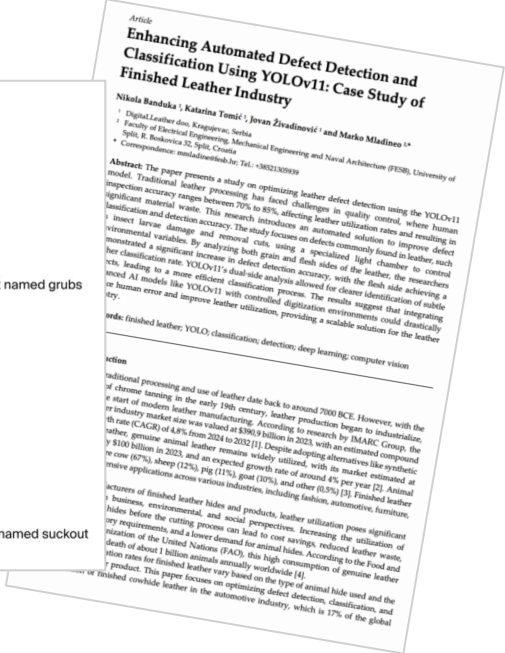


Figure 3. Example of an enlarged annotated image of grain (left) and flesh (right) leather sides showing a defect named suckout (cut damage).



Article

Enhancing Automated Defect Detection and Classification Using YOLOv11: Case Study of Finished Leather Industry

Nikola Banduka [1], Katarina Tomić [1], Jovan Živadinović [1] and Marko Mladineo [2,*]

[1] DigitalLeather doo, Kragujevac, Serbia
[2] Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture (FESB), University of Split, R. Boskovica 32, Split, Croatia
* Correspondence: mmladine@fesb.hr; Tel.: +38521305939

Abstract: The paper presents a study on optimizing leather defect detection using the YOLOv11 model. Traditional leather processing has faced challenges in quality control, where human inspection accuracy ranges between 70% to 85%, affecting leather utilization rates and resulting in significant material waste. This research introduces an automated solution to improve defect classification and detection accuracy. The study focuses on defects commonly found in leather, such as insect larvae damage and removal cuts, using a specialized light chamber to control environmental variables. By analyzing both grain and flesh sides of the leather, the researchers demonstrated a significant increase in defect detection accuracy, with the flesh side achieving a higher classification rate. YOLOv11's dual-side analysis allowed for clearer identification of subtle defects, leading to a more efficient classification process. The results suggest that integrating advanced AI models like YOLOv11 with controlled digitization environments could drastically reduce human error and improve leather utilization, providing a scalable solution for the leather industry.

Keywords: finished leather; YOLO; classification; detection; deep learning; computer vision

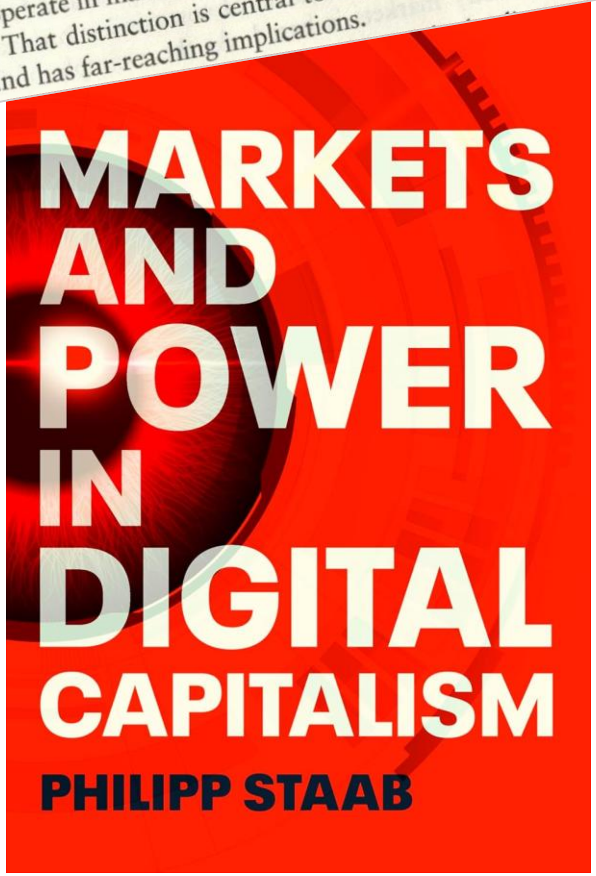
Introduction

Traditional processing and use of leather date back to around 7000 BCE. However, with the … of chrome tanning in the early 19th century, leather production began to industrialize, … start of modern leather manufacturing. …

4

A system of proprietary markets

In other words, the leading companies of the commercial internet are not natural monopolies in the classical sense. They also differ systematically in another respect – and this is the central argument of the present volume – from the 'monopolies' discussed by Schumpeter and others. Classical monopolies operate in markets; the leading companies of digital capitalism *are* markets. That distinction is central to any systematic theory of digital capitalism, and has far-reaching implications.



AI agents are a mega-trend in tech that we've been tracking from a few different angles. To catch you up: AI agents are another evolution beyond copilots, tackling complex tasks/workflows independently.

Here are 3 predictions from us (and links out to research so you can dig deeper into each) for the future of agents:

1. **Building agent trust/identity is a key market opportunity**, from the authentication/security layer to evaluation and other reliability techniques. This will enable agents to tackle more complex workflows and higher-stakes tasks, like making payments.
2. **More complex levels of agent interaction will transform the software landscape** — think specialized agents that work together. This is driving activity at the infrastructure layer of the AI agent stack around orchestration, multi-agent frameworks, and more.
3. **AI agent marketplaces will emerge** featuring dynamic agent "subcontracting" based on specialization, latency requirements, budget, specific integration capabilities, and more. (In the follow-up to Armstrong's tweet, HubSpot CTO Dharmesh Shah said he was building this.)

The Oracle Horizon

uncertainty, feed-forward, predictions

Image: Minority Report

Prediction is the business of the future


Harvard Business Review

Strategy | How AI Will Change Strategy: A Thought Experiment

Summary. AI is a prediction technology. Its improvement is akin to turning up the volume knob on a speaker dial. But rather than volume, you're turning up the AI's prediction accuracy. What happens to Amazon's strategy as their data scientists, engineers, and machine learning experts work tirelessly to dial up the accuracy on the prediction machine? In this example, it shifts Amazon's business model from shopping-then-shipping to shipping-then-shopping, generates the incentive to vertically integrate into operating a product-returns service (including a fleet of trucks), and accelerates the timing of investment due to first-mover advantage from increasing returns. All this is due to the single act of turning the dial on the prediction machine. **close**

from

shopping-then-shipping

(**feed-back** economy)

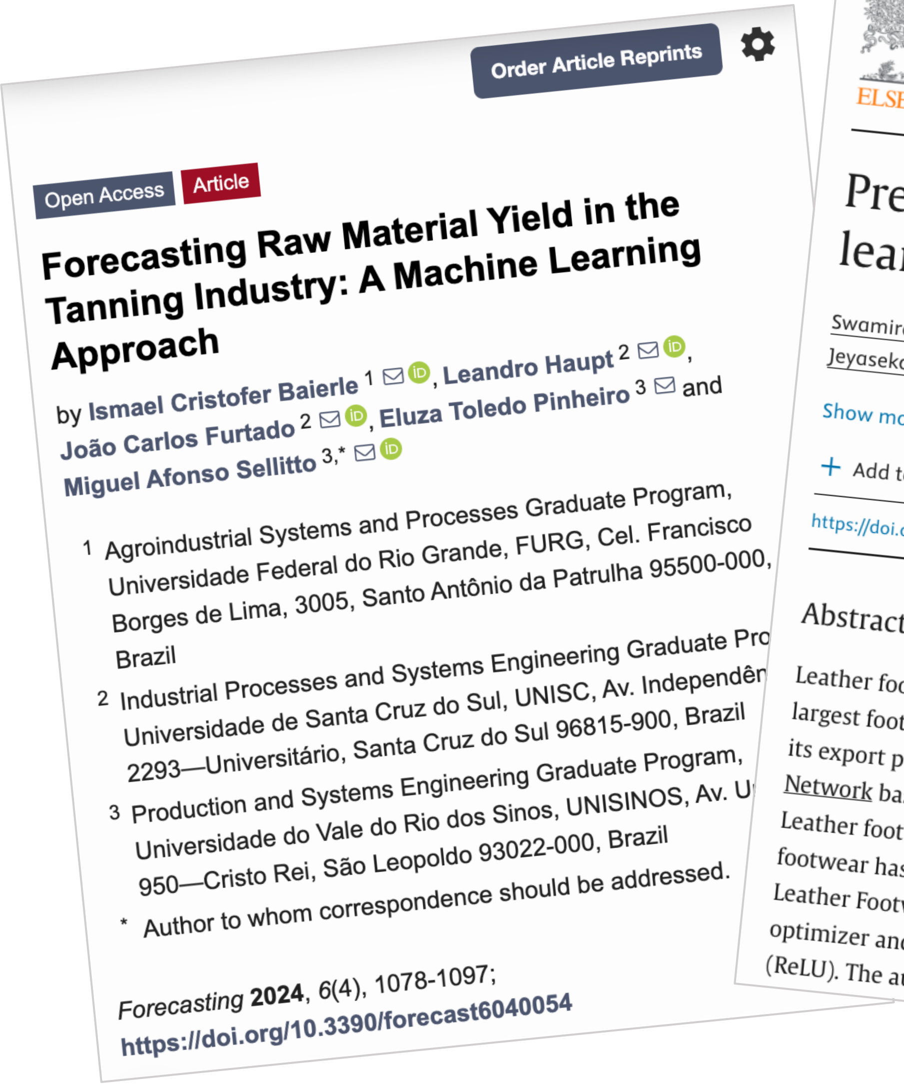
to

shipping-then-shopping

(**feed-forward** economy)


oracles ... oracles ...
everywhere
alertative mobility
predictive medicine
preventive maintenance
preemptive cybersecurity
anticipative writing
recommendative mediality

… in leather industry



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Open Access Article

Forecasting Raw Material Yield in the Tanning Industry: A Machine Learning Approach

by Ismael Cristofer Baierle [1], Leandro Haupt [2], João Carlos Furtado [2], Eluza Toledo Pinheiro [3] and Miguel Afonso Sellitto [3,*]

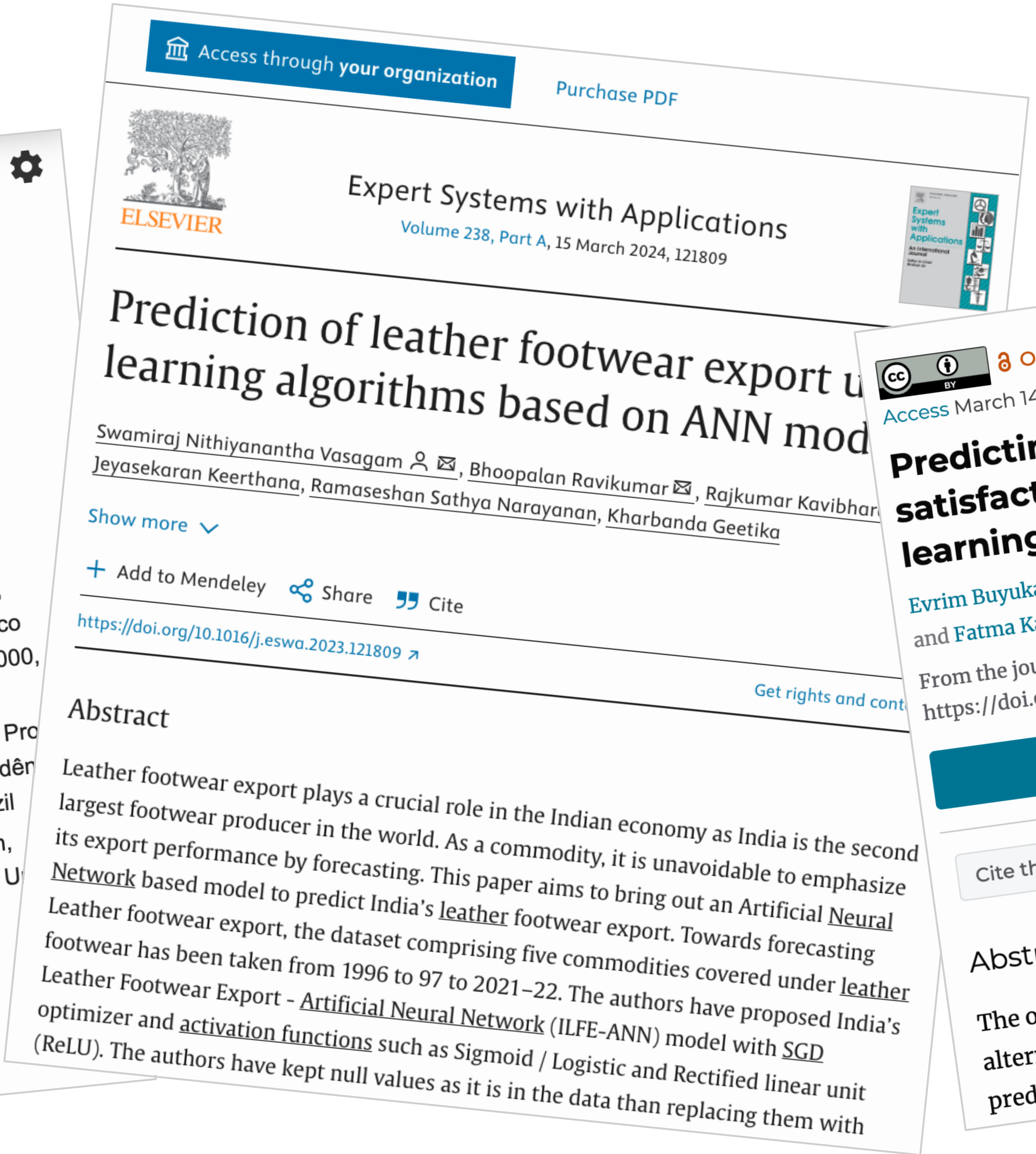
1 Agroindustrial Systems and Processes Graduate Program, Universidade Federal do Rio Grande, FURG, Cel. Francisco Borges de Lima, 3005, Santo Antônio da Patrulha 95500-000, Brazil

2 Industrial Processes and Systems Engineering Graduate Pro… Universidade de Santa Cruz do Sul, UNISC, Av. Independên… 2293—Universitário, Santa Cruz do Sul 96815-900, Brazil

3 Production and Systems Engineering Graduate Program, Universidade do Vale do Rio dos Sinos, UNISINOS, Av. U… 950—Cristo Rei, São Leopoldo 93022-000, Brazil

* Author to whom correspondence should be addressed.

Forecasting **2024**, 6(4), 1078-1097; https://doi.org/10.3390/forecast6040054



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ELSEVIER

Expert Systems with Applications

Volume 238, Part A, 15 March 2024, 121809

Prediction of leather footwear export u… learning algorithms based on ANN mod…

Swamiraj Nithiyanantha Vasagam, Bhoopalan Ravikumar, Rajkumar Kavibhar… Jeyasekaran Keerthana, Ramaseshan Sathya Narayanan, Kharbanda Geetika

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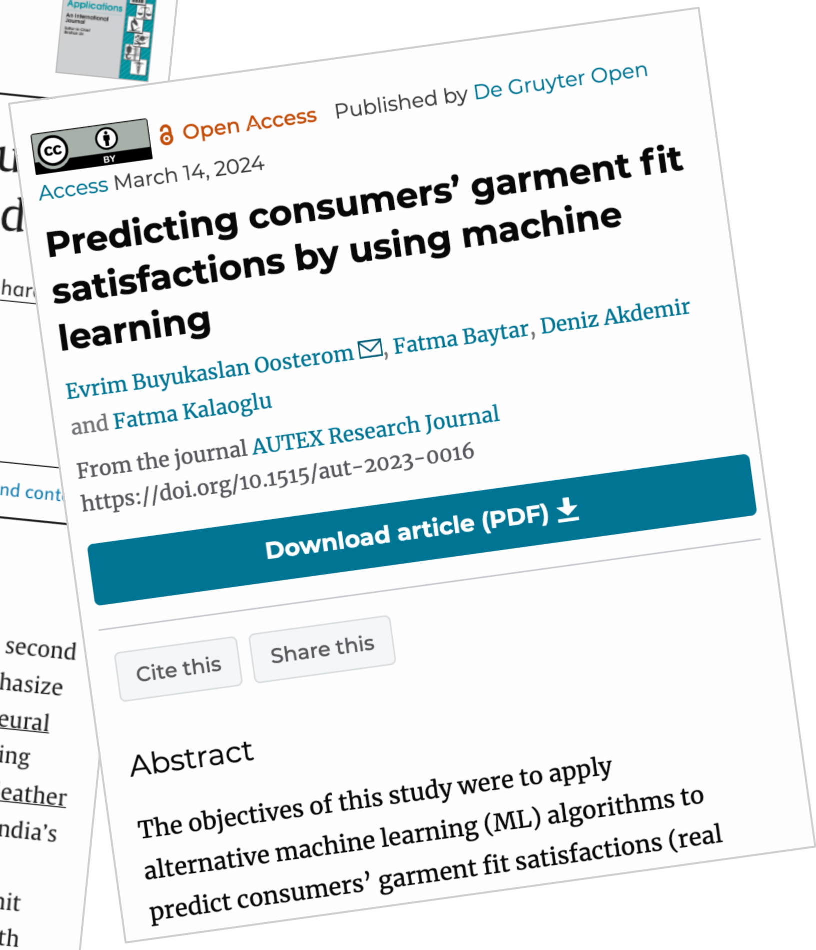
Abstract

Leather footwear export plays a crucial role in the Indian economy as India is the second largest footwear producer in the world. As a commodity, it is unavoidable to emphasize its export performance by forecasting. This paper aims to bring out an Artificial Neural Network based model to predict India's leather footwear export. Towards forecasting Leather footwear export, the dataset comprising five commodities covered under leather footwear has been taken from 1996 to 97 to 2021–22. The authors have proposed India's Leather Footwear Export - Artificial Neural Network (ILFE-ANN) model with SGD optimizer and activation functions such as Sigmoid / Logistic and Rectified linear unit (ReLU). The authors have kept null values as it is in the data than replacing them with



Open Access Published by De Gruyter Open Access March 14, 2024

Predicting consumers' garment fit satisfactions by using machine learning

Evrim Buyukaslan Oosterom, Fatma Baytar, Deniz Akdemir and Fatma Kalaoglu

From the journal AUTEX Research Journal
https://doi.org/10.1515/aut-2023-0016

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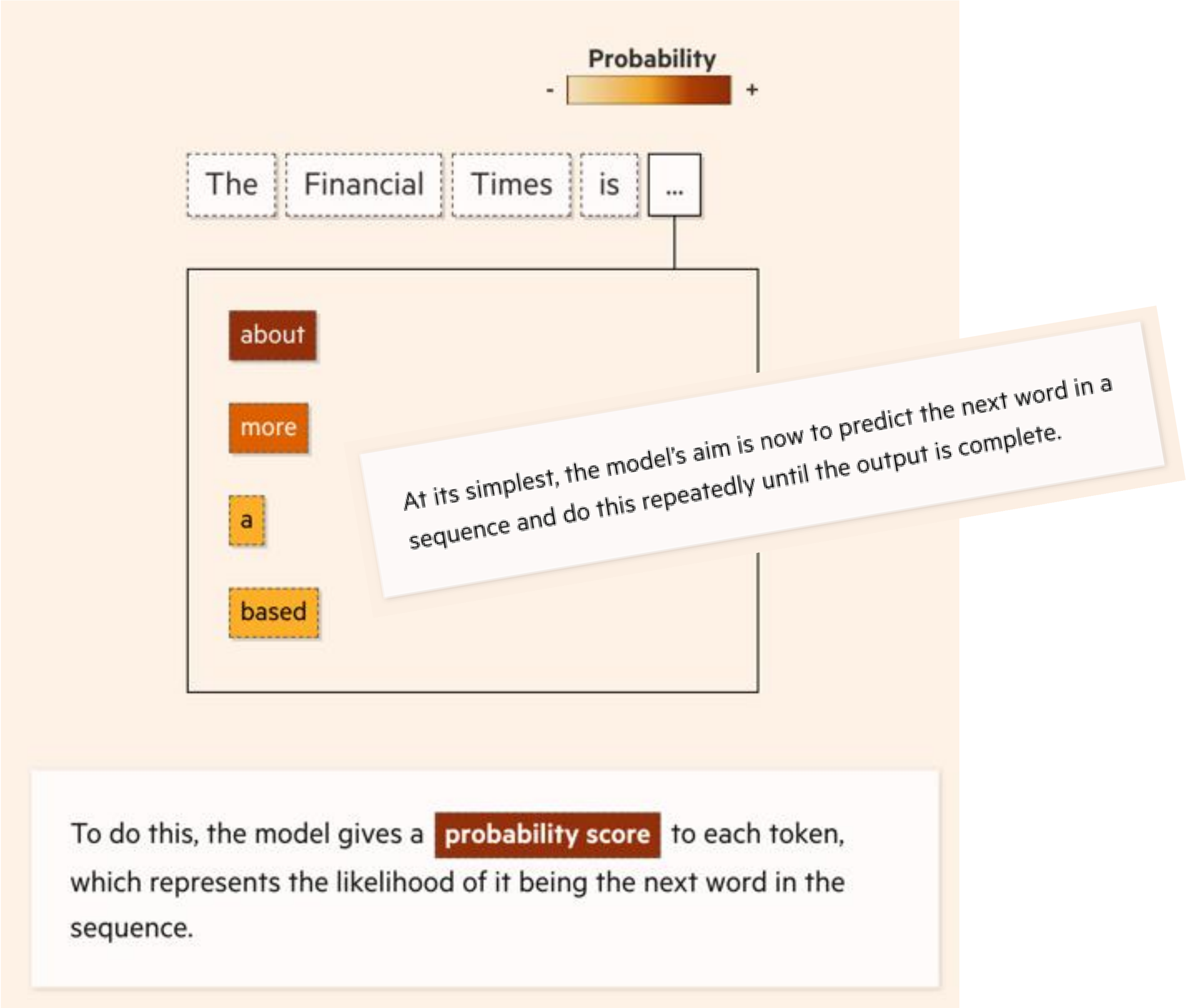
Abstract

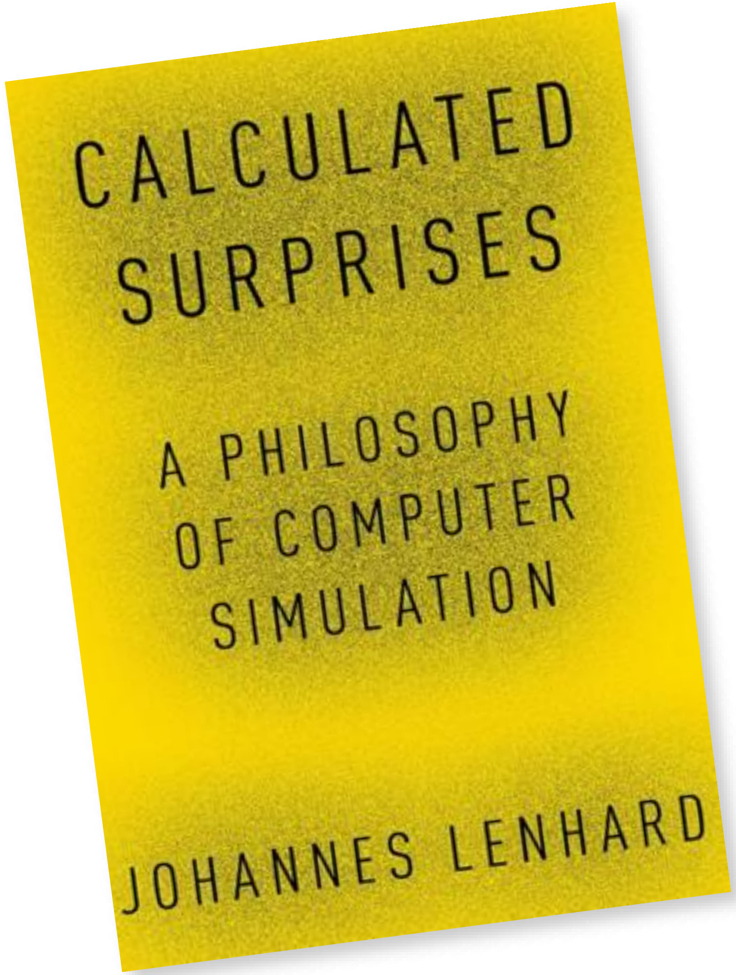
The objectives of this study were to apply alternative machine learning (ML) algorithms to predict consumers' garment fit satisfactions (real

The Power
Of Simulation

optimization, competition, innovation

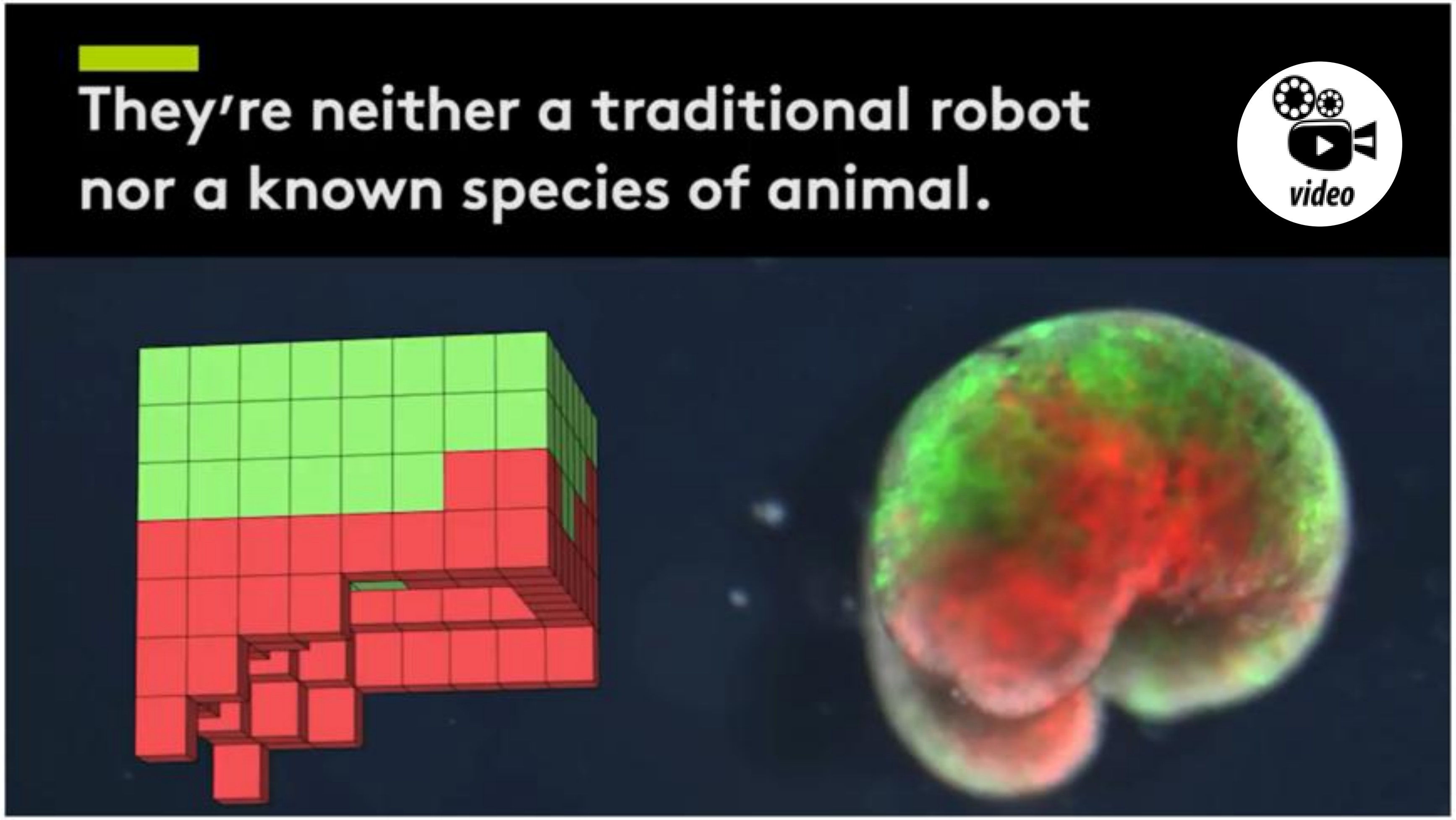
An LLM is a **text predictor** … a computational simulation of human language

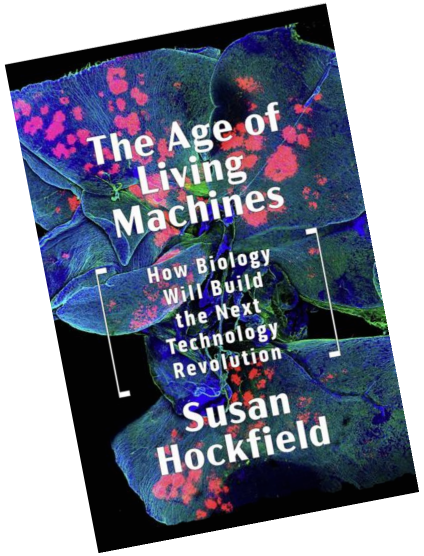




Computational simulation is an **epistemological revolution**

From automated languages to synthetic biology, from digital twins to extended realities …





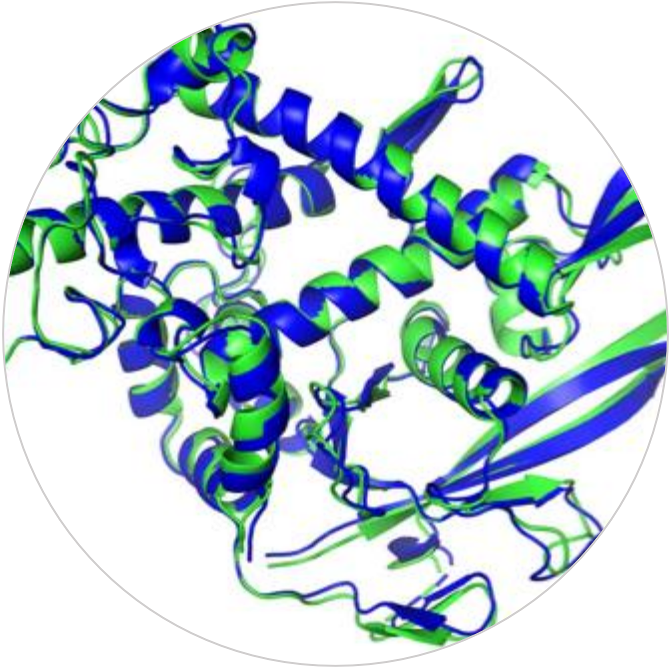
Living machines

xenobots …

Old Century
Physics + Engineering

New Century
Biology + Engineering

Computational simulations: from words to worlds



protein folding

(micro)

planet twinning

(macro)

… in leather industry

26/11/2024, 09:21 Energy-saving and low-carbon leather production: AI-assisted chrome tanning process optimization - ScienceDirect

ScienceDirect

Journal of Cleaner Production
Volume 457, 10 June 2024, 142464

Energy-saving and low-carbon leather production: AI-assisted chrome tanning process optimization

Long Zhang [c], Qingsu Cheng [b], Chunhua Wang [a c], Changping Huang [c], Wei Lin [a c]

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Highlights

- The AI-assisted optimization approach for the tanning process was first proposed.
- Mathematical models in chrome tanning procedure were developed and evaluated.
- The optimization model of tanning process was systematically constructed.
- The optimal process parameters were generated by GA and validated via lab testing.
- The optimal tanning process can achieve energy saving and carbon reduction.

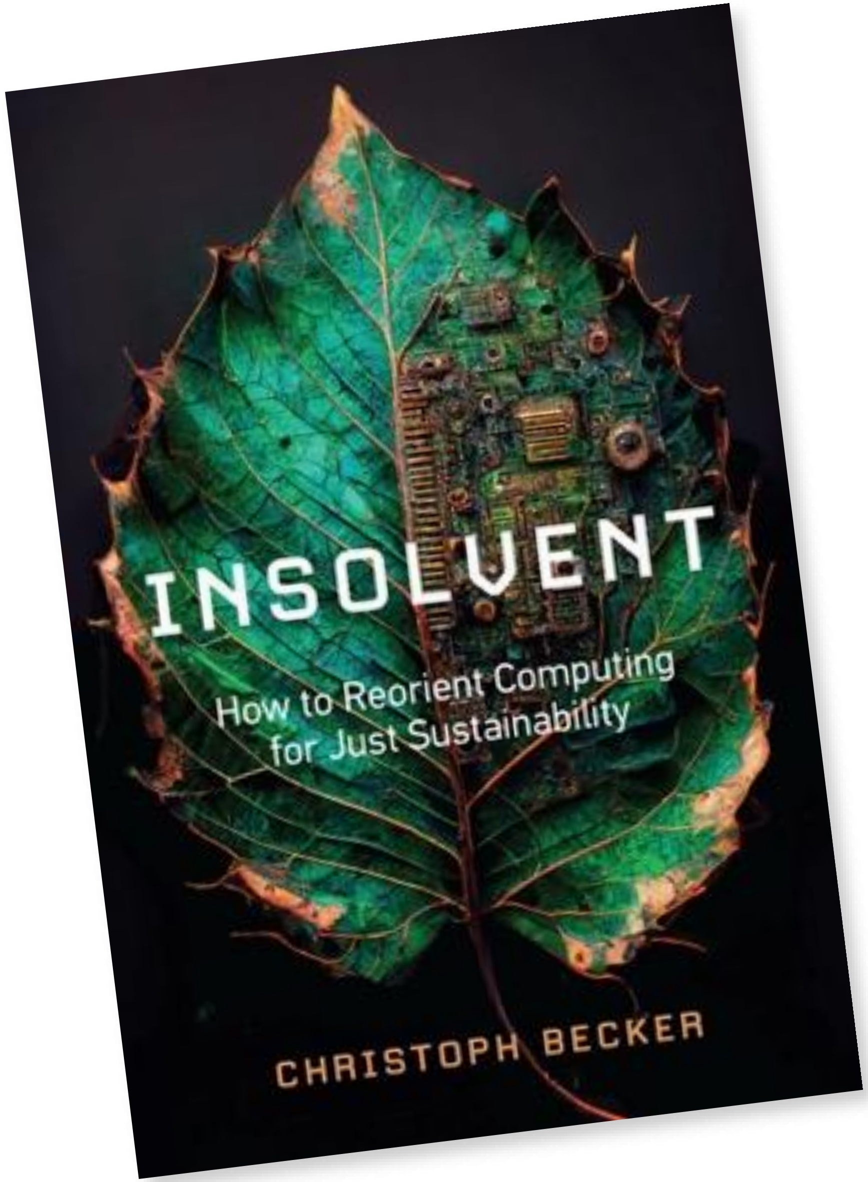
Fig. 9 Concept designs generated by Midjourney (Bhurke, 2023)

Although the AI-enabled designs, as shown above, are quick, elaborate and unique, many challenges need to be addressed with human intervention, especially in the context of functionality and ergonomics. There is no checkpoint to confirm that the footwear produced by AI algorithms is safe and comfortable for wearers. It requires careful human intervention for iteration, testing and validation of the designs to ensure that they meet the highest quality and performance standards.

Hence, an 'augmented concept design process' involving human and machine intelligence has been proposed.

UK biotech startup expands lab-grown leather production capacity

DANIELA CASTILLO MONAGAS — SEPTEMBER 10, 2024



✓ Build **(Your) Strategic Map** for the New (Leather) Science & Engineering

✓ Embrace and **Execute the (New) Economic Paradigms**

✓ With Great Power comes Great **(Planetary) Responsibilities**

grazie

Cosimo Accoto

Tech Philosopher | Research Affiliate & Fellow (MIT) | Adjunct Professor (UNIMORE) | Startup Advisor & Instructor