

RISKS AND
OPPORTUNITIES
OF AI

Risks of Using AI Apps vs Rule-Based Apps

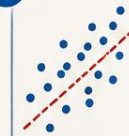
- ▶ **AI applications differ from rule-based applications only in that they utilize neural networks that produce predictions that are used in decision-making.** To manage the risks of using neural networks, it is necessary to understand the general characteristics of neural networks:
 - ▶ The neural network is a statistical model that approximates the dependence between the input data and the target results of the training material.
 - ▶ The neural network's ability to predict the results is based on the assumption that the data in its use case behaves like the training material.
 - ▶ A neural network is a "black box" for humans. Therefore, the accuracy of the results provided by the network can only be obtained by checking the results from a source outside the neural network.
- ▶ **The uncertainties brought about by neural networks are not necessarily risks if they are known and acknowledged.** Risks arise from the fact that uncertainties are not known or their effects are underestimated. Risks increase especially when decision-making is automated.

Risks of Using AI Applications vs. Traditional Rule-Based Applications

We use neural networks in AI applications, and their outputs are used in decision-making.



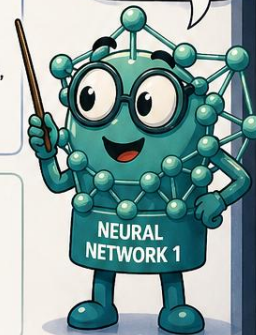
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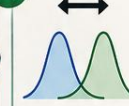
A neural network is a statistical model that approximates the relationship between input features and target outcomes in the training data.

The model produces predictions, whose **uncertainty is difficult to estimate reliably.**

We learn from example data and make predictions!

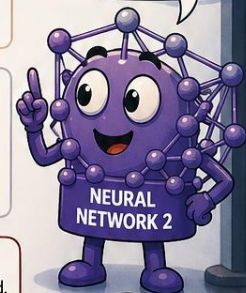


2



A neural network's predictive performance relies on the assumption that the data it sees in use **behaves like the training data.**

Our predictions have uncertainty, which is hard to measure!



3



A neural network is a **black box** to humans, so the user does not know how the network produces its outputs.

4



The correctness of a neural network's outputs cannot be verified from the network itself, but only from an external source.

The key is to understand these points so that we can manage the risks.



These sources of uncertainty do not necessarily create risks if they are understood and acknowledged. Risks arise when uncertainties are unknown or underestimated. **Risks increase especially when decision-making is automated.**

The most important thing is to use outputs wisely and take responsibility for the decisions.

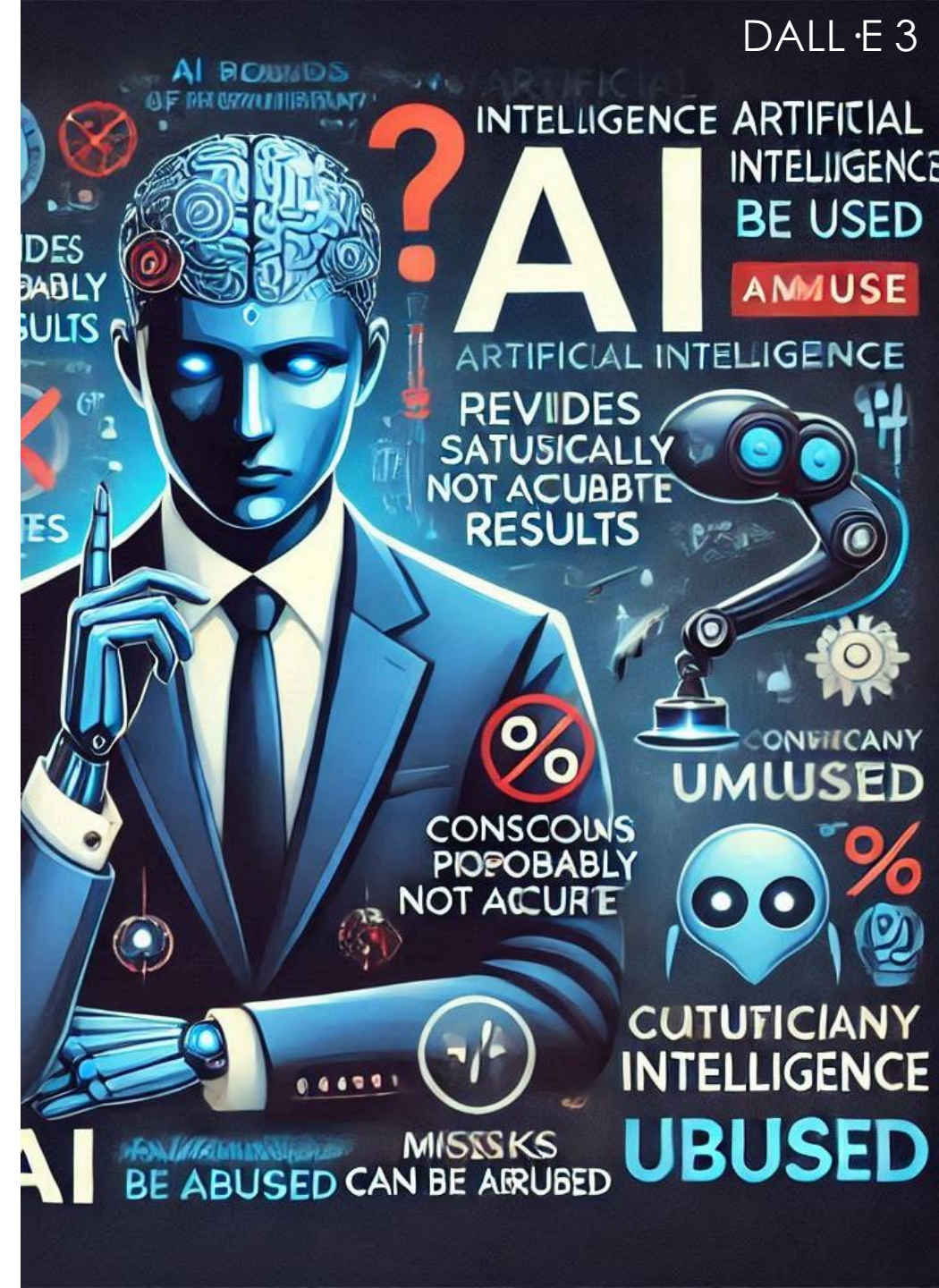
MODEL OUTPUT

AUTOMATED DECISION



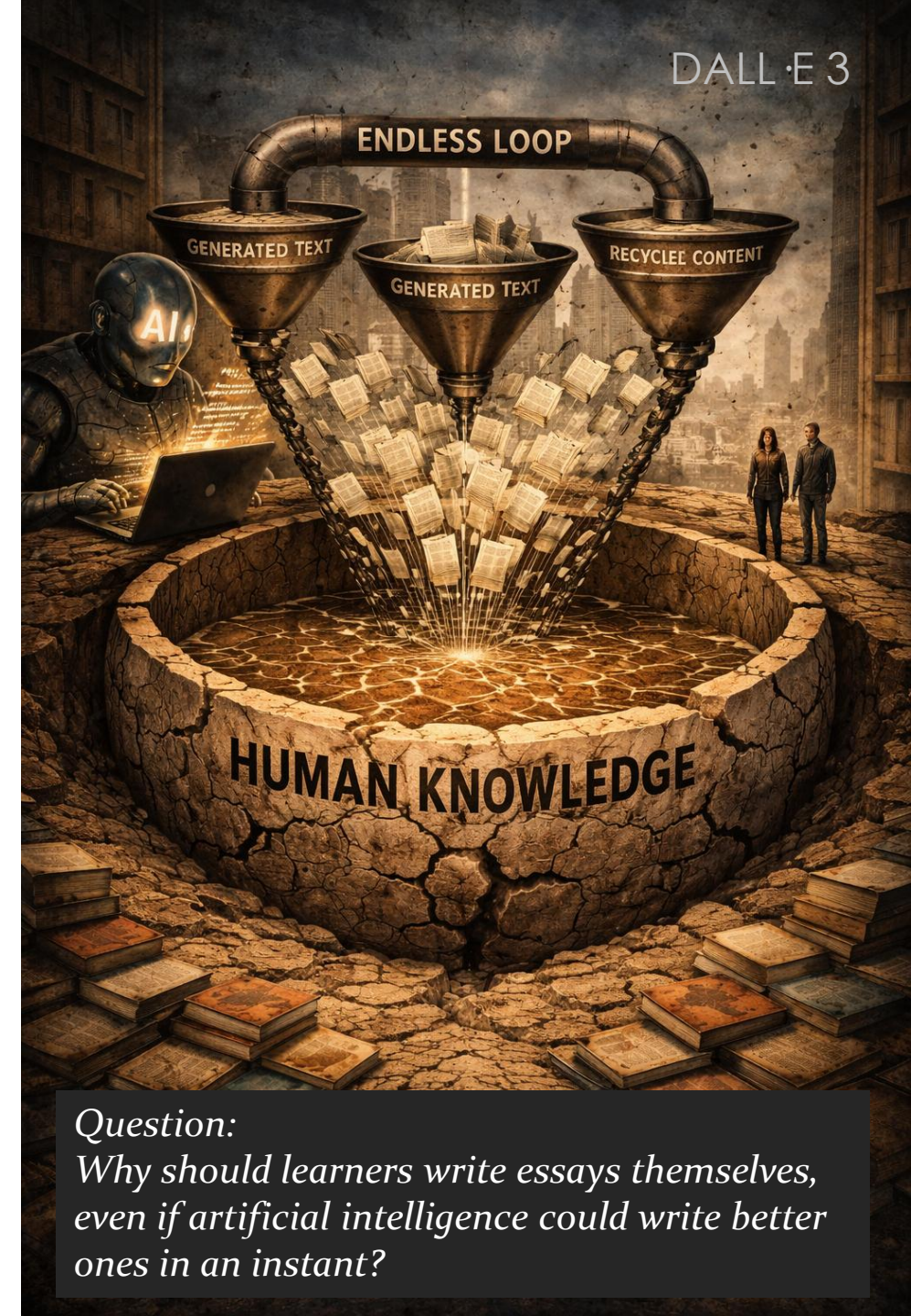
Risks associated with the use of generative AI

- **The persuasive language of generative AI responses can give unwarranted confidence in the accuracy of the content of the responses and lead to erroneous conclusions.**
- **Generative AI is being deliberately abused.** AI is an easy, cheap and effective tool even in the hands of abusers, and a lack of understanding of AI makes people vulnerable to misuse.
- **Generative AI outputs are published irresponsibly,** without quality and accuracy checks, and without knowledge that AI has produced them.
- **Generative AI is used in a way that impairs or replaces the learning process.** This easily leads to a spiral of narrowing of expression and impoverishment of cognitive processes.
- **The use of generative AI and training consume a lot of energy.** This is a significant problem in a situation where we should be fighting climate change by all means.



The Impoverishment of Humanity's Literary Knowledge and Cultural Resources

- ▶ **A good human writer creates something new and uses descriptive, precise and witty expressions.** Because the literary works of different authors are shaped by diverse life experiences and cultural and intellectual backgrounds, humanity's collective output creates a diverse body of work that genuinely expands human knowledge and cultural heritage.
- ▶ **Artificial intelligence averages existing written material and reinforces its biases but does not actually create anything new.**
- ▶ **If people's own writing decreases and models are repeatedly trained on text produced by artificial intelligence, the models will become impoverished;** diversity decreases, rare and valuable modes of expression disappear, text converges towards the statistical average, and new thinking also weakens.
- ▶ **The risk of narrowing expression also applies to image, sound and other outputs of generative artificial intelligence.**



Question:

Why should learners write essays themselves, even if artificial intelligence could write better ones in an instant?

Are we managing change?

- High expectations of AI's capabilities may lead to efforts to apply AI to applications where AI is not the right or best solution.
- Good and functional AI solutions can also cause changes so quickly that the environment does not have time to adapt to them.
- AI can replace humans in many tasks, but on the other hand, it brings completely new tasks and competence needs. There have been various speculations about the form and extent of the change, but its impact on the labour market and thus on society as a whole is likely to be great.



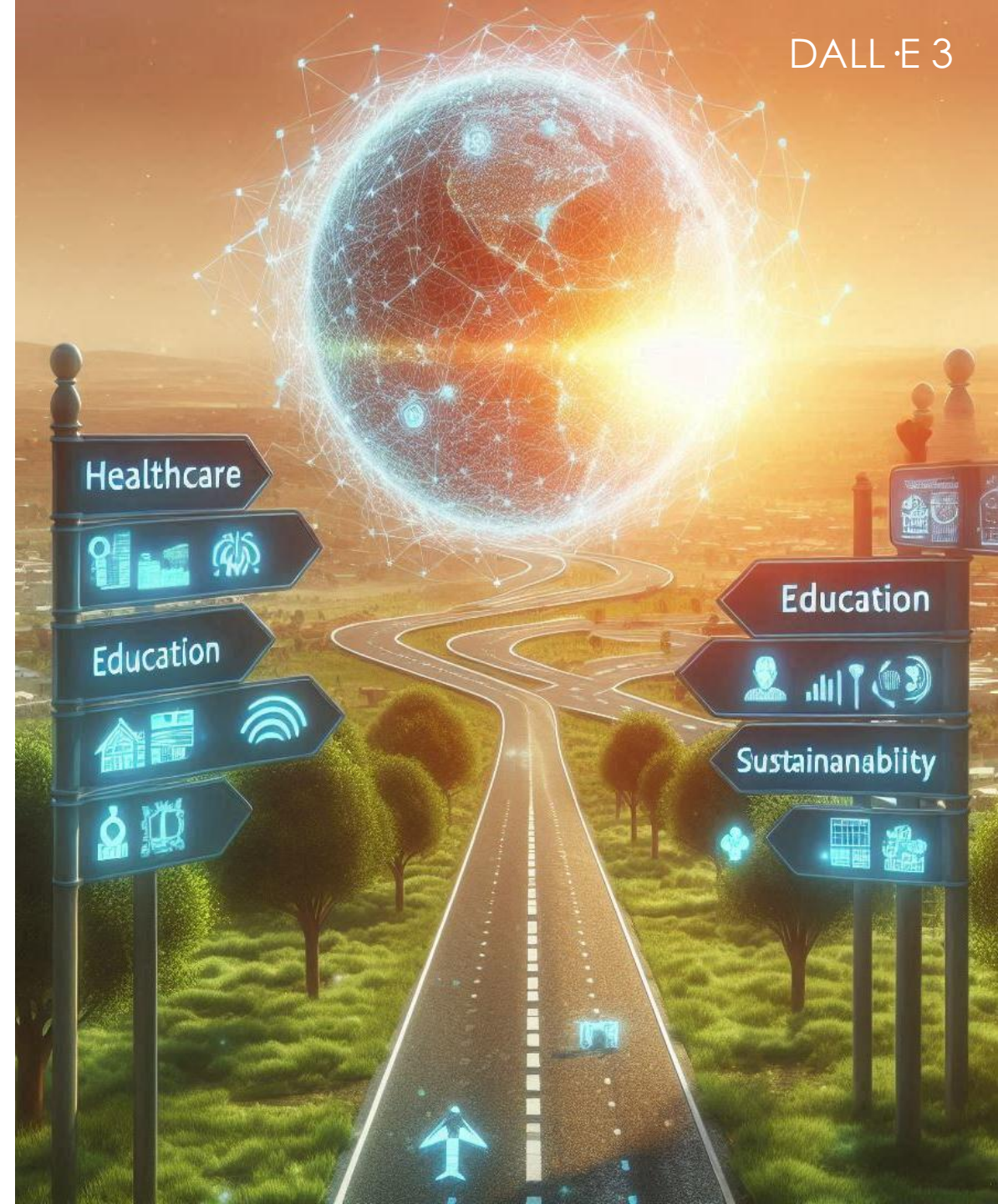
Regulation of AI

- Various parties have woken up to the fact that the management of the risks posed by AI requires regulation. The EU has tackled the risks of AI with its AI Act.
- However, the regulation of AI will inevitably lag behind the technological development of AI, and the preparation and application of regulation will be cumbersome and challenging.
- The regulation of AI is also a balancing act between the development opportunities of AI and the risks posed by AI.



Artificial intelligence brings tremendous opportunities

- **The uncertainties related to the use of neural networks presented are not faults or weaknesses of neural networks**, but known features of neural networks by definition.
- **When used correctly and responsibly, AI is an unprecedentedly powerful tool** that can significantly help us in healthcare, food production, environmental protection, logistics, productivity improvement and many other areas.



Summing up the threats and opportunities AI

- **All development involves both threats and opportunities.** Both must be identified, and both must be discussed.
- **AI is a tool that the user is responsible for.** A skilled user benefits from the tool, and an unskilled user can cause damage with it.

