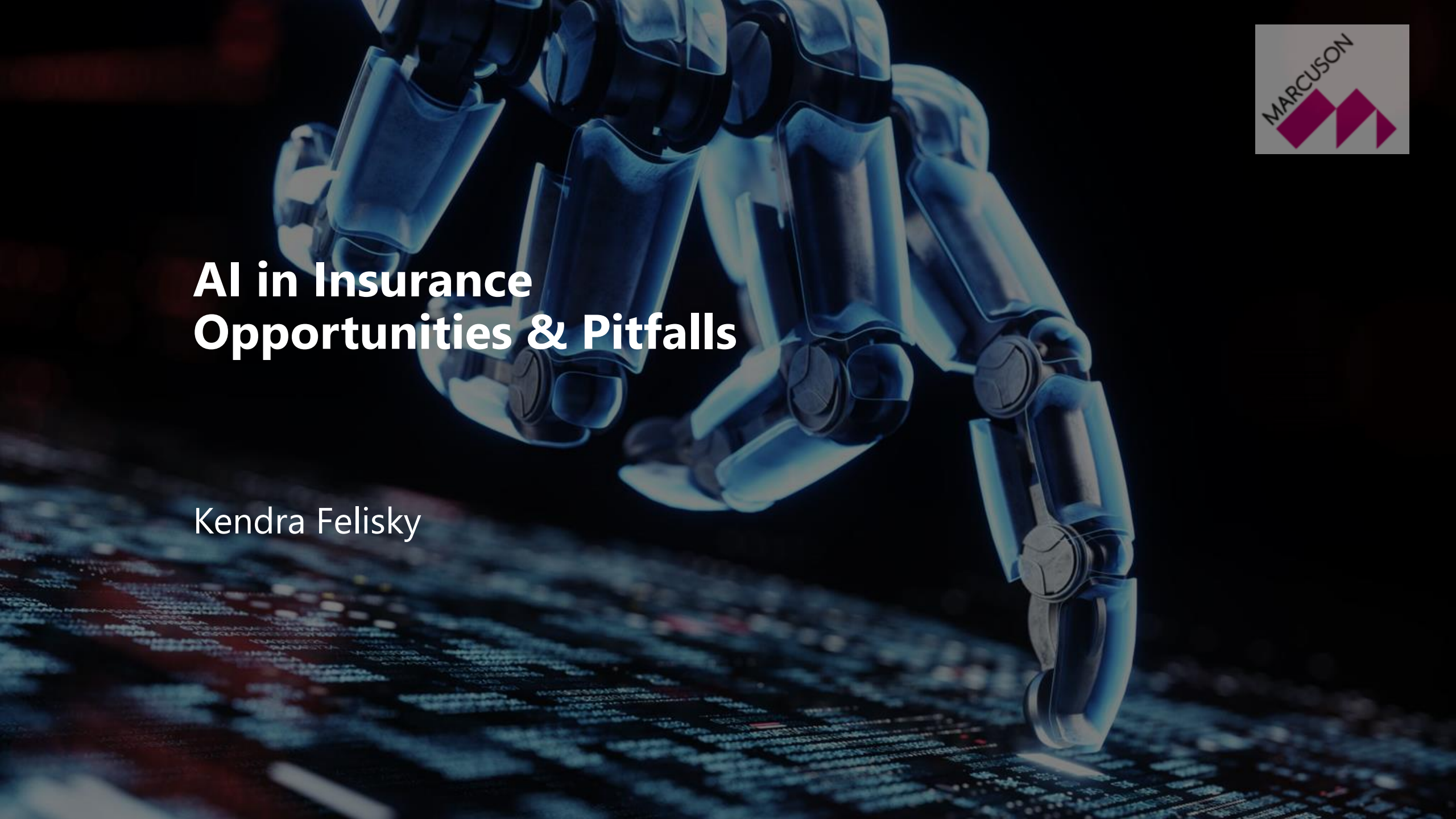


AI in Insurance
Opportunities & Pitfalls

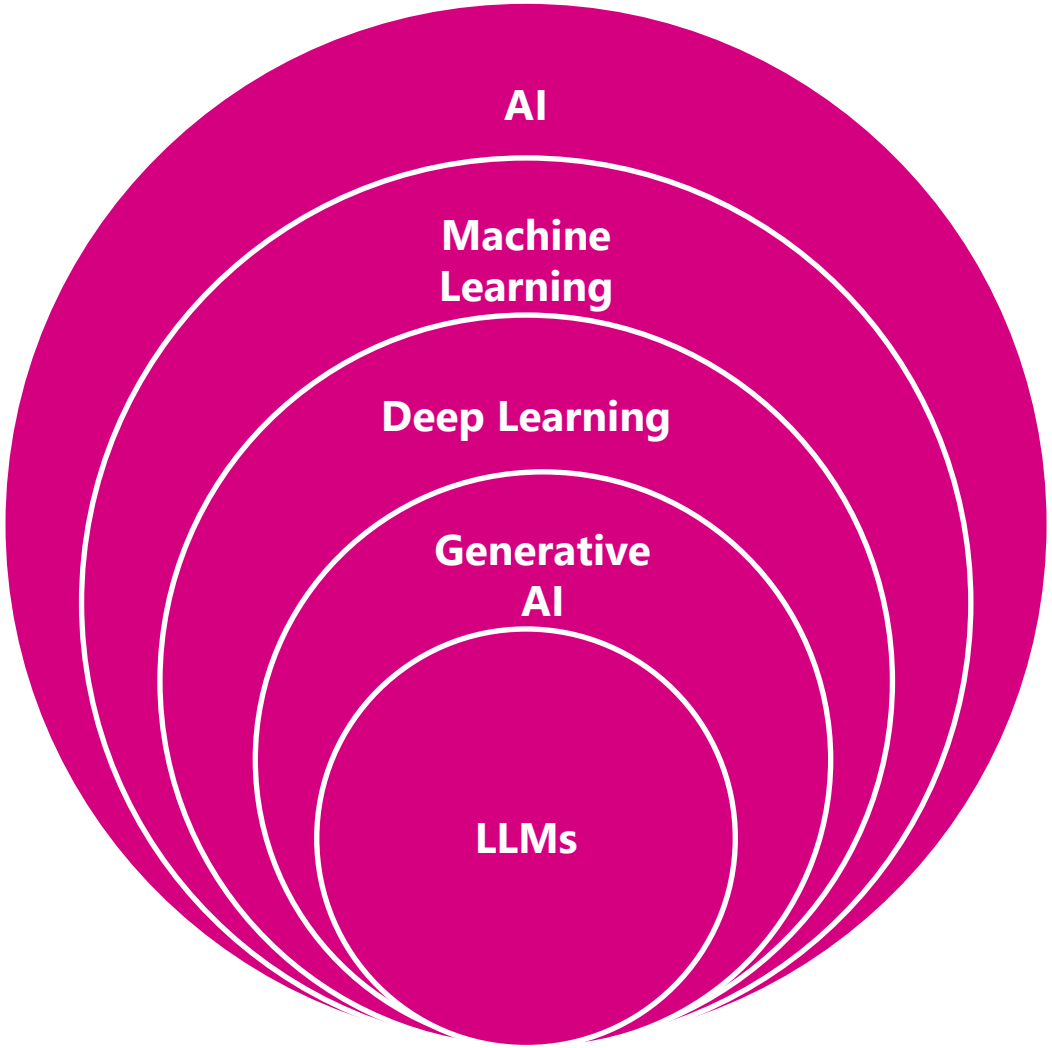
Kendra Felisky

Contents

Definition of AI

Artificial intelligence is a specific branch of computer science concerned with replicating the thought process and decision-making ability of humans through computer algorithms.

Evolution of AI

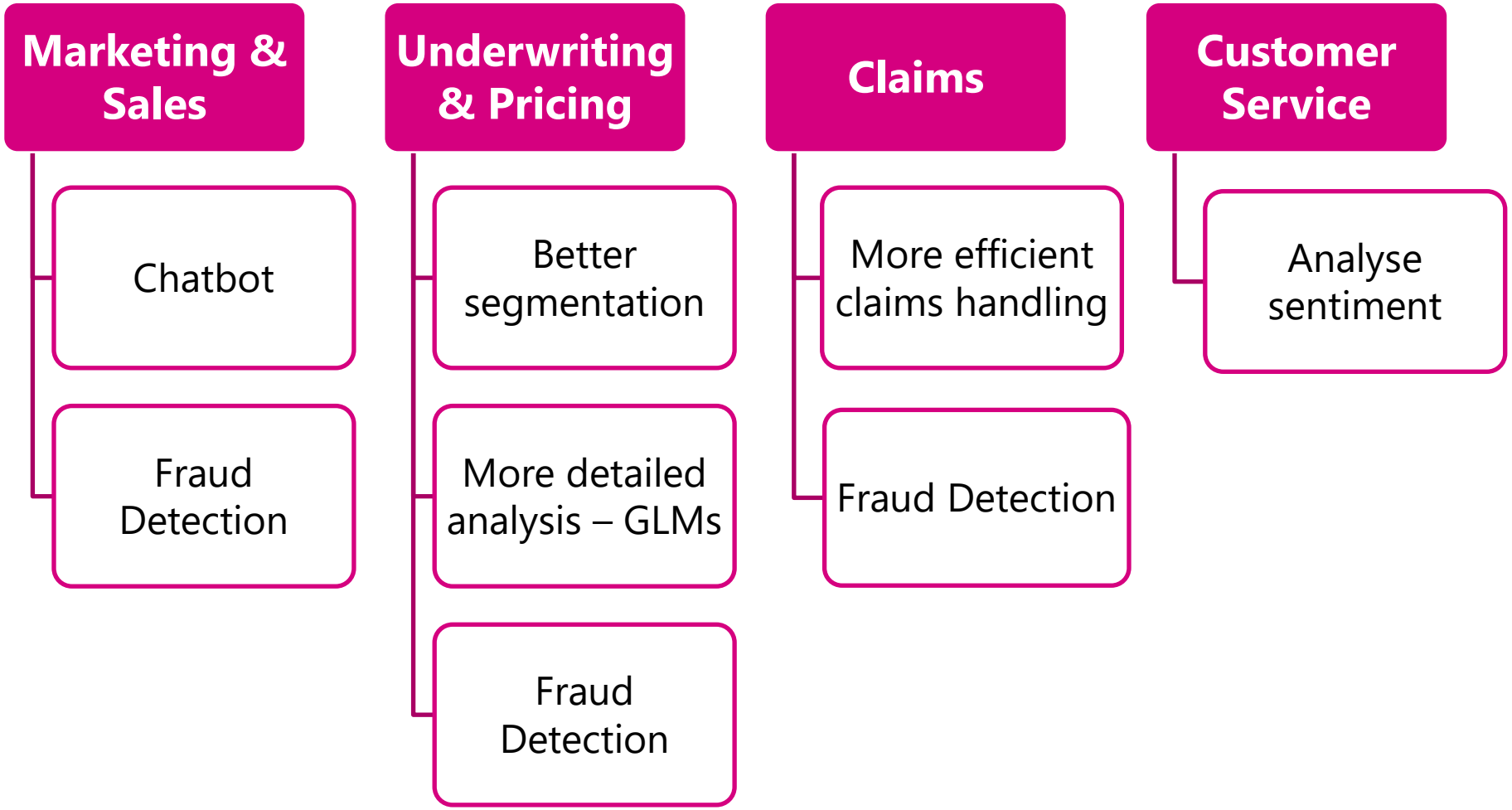


Where do you encounter AI?

AI INSURANCE RELATED OPPORTUNITIES

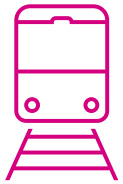
Opportunities

Insurance Processes

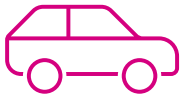


Opportunities

Usage-Based Insurance



- **Fully-automated embedded insurance** e.g. train tickets, products.
  - Instantaneous Underwriting Decisions and Pricing
  - Integrated Claims Handling



- **Customisable temporary insurance** e.g. car insurance, travel insurance.
  - Dynamic pricing, accounting for new risks chosen.
  - Immediate, anytime.
  - Risk reactive – warn and educate users of how to avoid risks.

Claims Fraud Detection Model

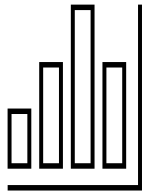
- **Business Problem**
  - Claim referral can be inconsistent. Heavy dependence on claims adjuster

- **Multiple Analytics Solutions**
  - Consistent referrals
  - False positives
  - Recognition of claim patterns
  - Clustering methods
  - PRIDIT

Other Insurance Opportunities

Climate Insurance – Risk quantification and insurability.

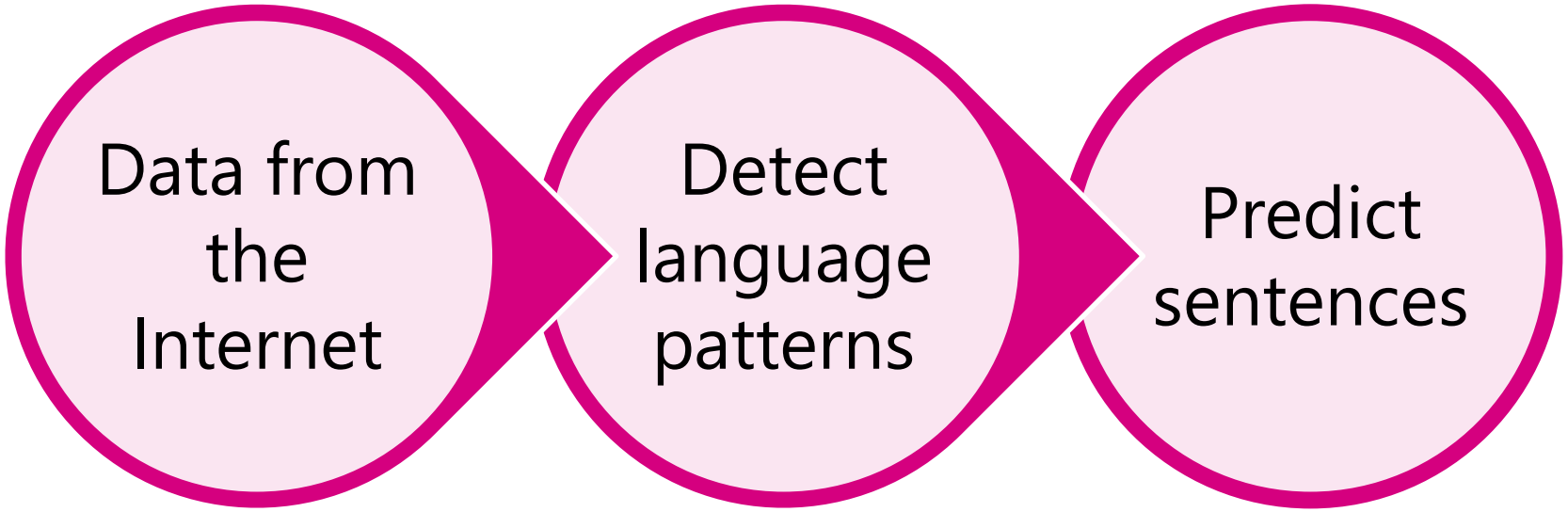
Cyber Insurance – Insuring all sides of AI



Telematics – Processing large amounts of data

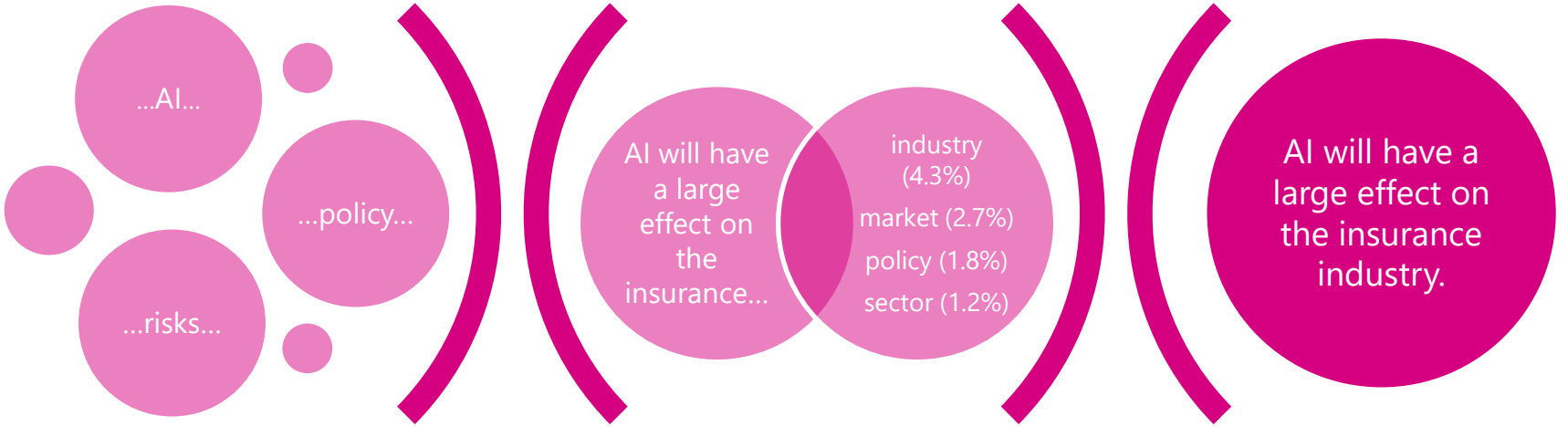
HOW DO THE GENERATIVE MODELS WORK?

Training – Simple Explanation



Training – Complicated Explanation

Lack of determinism: Same input, not necessarily same output



Train on a large body of text – trillions of tokens

Calculate a probability distribution for the next word, based on the data.

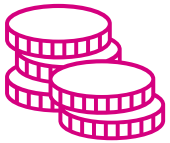
Apply the probability distribution to generate the next word.

Unreliability - Hallucinations

- LLMs fundamentally prone to hallucinations
- Amplify or invent bias from the training set.
- Overfitting - consider irrelevant factors not relevant to whole population

Human oversight and verification will remain necessary!

Training - Expensive



Financial

- Can estimate cost by looking at the computational resources required, and the cost to rent such resources.
- Typical estimates in excess of $10 million

Environmental

- ~500MWh Power - Equivalent to a small town
- ~200 tons of CO2e – Equivalent to running 100 large cars over a year
- To train a LLM, it requires a similar amount of electricity as the entirety of Gibraltar uses on an average day.

https://towardsdatascience.com/behind-the-millions-estimating-the-scale-of-large-language-models-97bd7287fb6b

Computational Cost – Pre-Trained Models

Advantages	Disadvantages
Cost	Not precisely tailored
Adaptability	Cannot train on internal data
Public documentation	Licensing
	Integration

- Existing models e.g. OpenAI's GPT, Meta's LLaMA, Google Bard

LEGAL & REGULATORY CONCERNS

Regulatory

Evolving Risks of Legislative Change

UK

- AI Safety Summit
- Create AI Safety Institute
- Centre for AI R&D
- "State of AI" Report

Europe

- More cautious
- Italy ban on ChatGPT

USA

- New standards for AI Safety and Security
- Developers must share
- Protect against: Biological Weapons Fraud
- Ensure AI advancing equity and civil rights

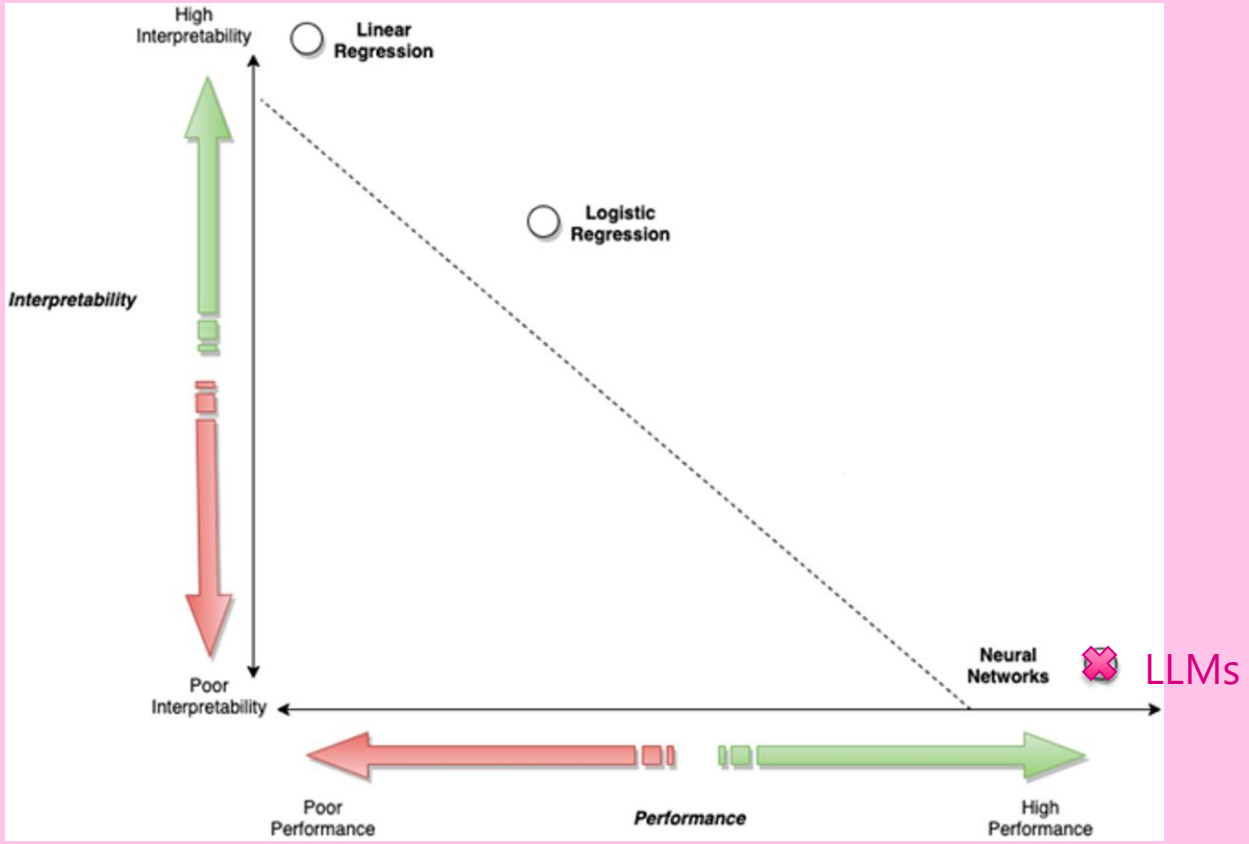
Legal

Data	Explainability

LLMs – huge amounts of data required

Governance & security are key

GDPR…



Interpretability versus performance trade-off given common ML algorithms, Amazon Web Services

Legal

Liability for AI Decision-Making

- Who is at fault for the consequences of an AI decision?
  - The programmers
  - The data provider
  - The company providing the AI-integrated product/service
  - The user
  - The AI itself

- For self driving cars: the insurer takes on the responsibility from the driver.
  - Insurer can then claim against the manufacturer

2018 British Automated and Electric Vehicles act

Conclusion

- Great potential to disrupt the insurance industry.
- Develop and invest in AI capabilities.
- Keep up to date with changes to regulation.