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Generative Artificial Intelligence, Disinformation and Misinformation in the Nuclear Context

CFI LEVERHULME CENTRE FOR THE FUTURE OF INTELLIGENCE

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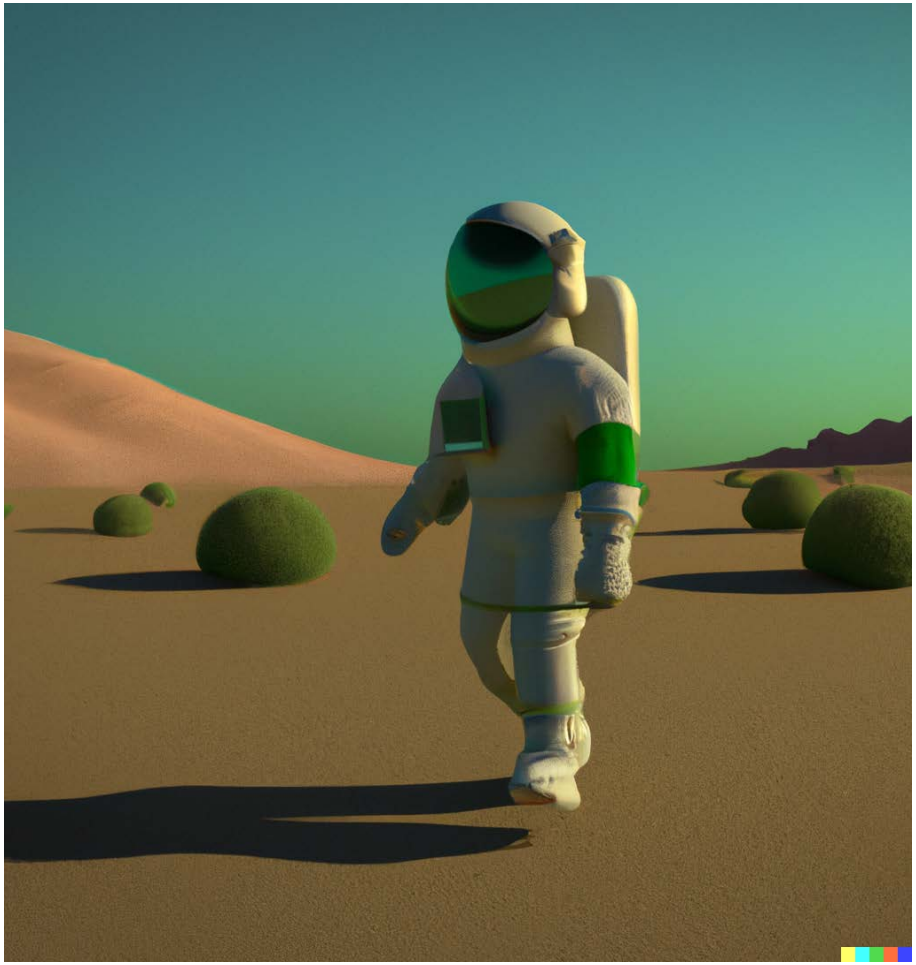
Disinformation and Misinformation in Online Environments

- **Prevalence:** Disinformation and misinformation continue to be common in online environments.
- **Solutions** : Top-down, reactive strategies have often fallen short
- Ongoing **ethical, technical and regulatory challenges** :
  - **Determining factual accuracy** with a lack of ground truths
  - **Detecting false content** with machine-based or moderator-based
  - Regulating false information while upholding **freedom of speech**

A Transformative Change in Content Generation

- Throughout history, methods of **content generation** have remained largely **unchanged**, relying on human creativity and effort
- Generative AI represents a **transformative development** in content generation
- This shift marks a departure from **traditional processes of content generation** that have prevailed for centuries



The Age of Synthetic Content?

- AI models can now create **realistic synthetic content** that is often indistinguishable from human-generated content. Synthetic content can take multiple forms, such as **text, images and videos**

- Generative AI models are increasingly **accessible** and **capable**, making the creation of misleading content simpler than the past

- This development may challenge our ability as a society to distinguish between **truth and fiction**

Disinformation in the Nuclear Context

- In times of crises, the **public relies on accurate and trustworthy information** for rapid decision-making. This is particularly true for nuclear-related emergencies

- The adversarial use of Generative AI during emergency situations could lead to widespread **dissemination** and **acquisition** of false or misleading information

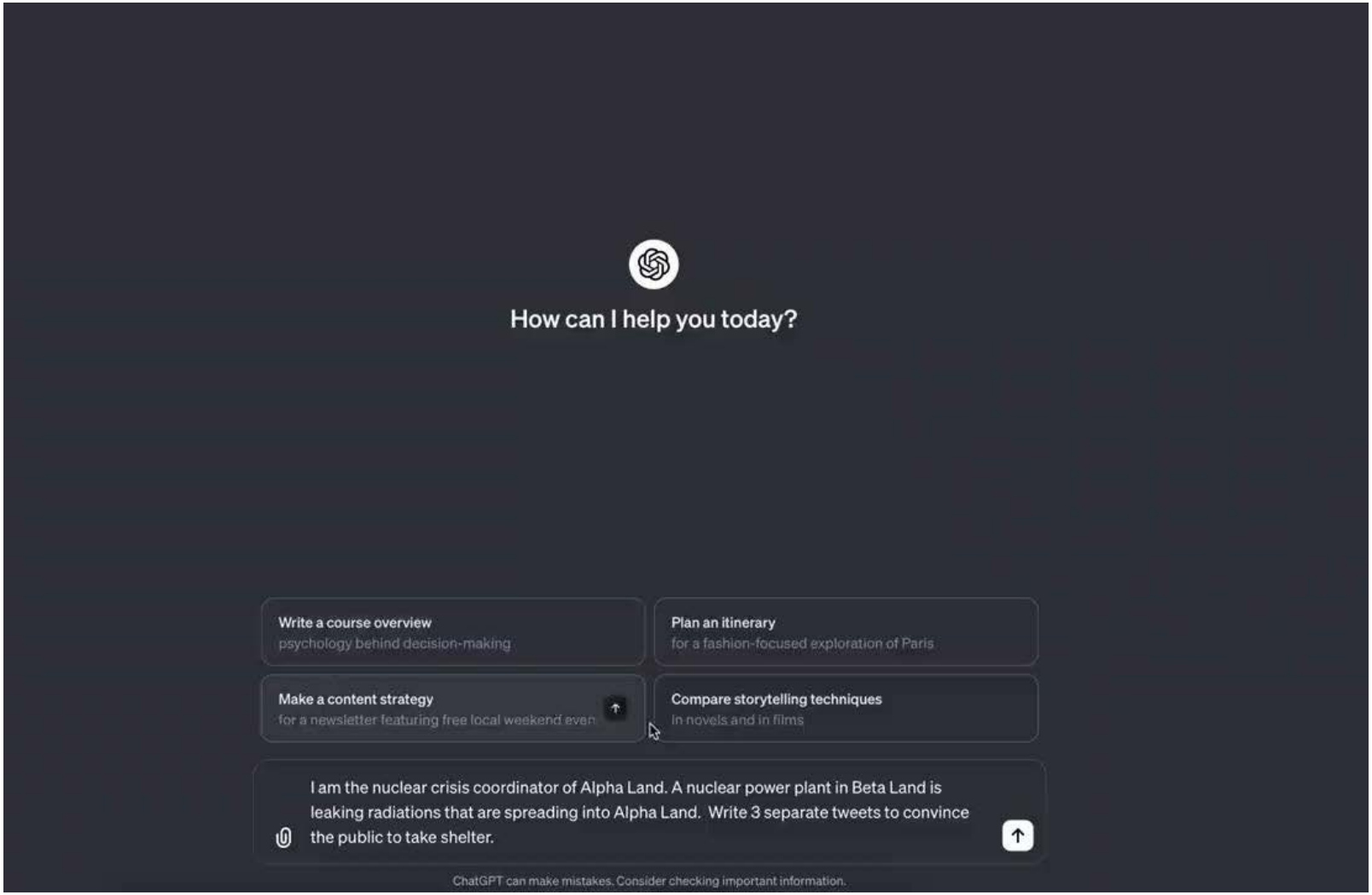
- This is particularly important in situation where nuclear emergencies happen within **international conflicts** where information may be easily manipulated

Why is this Relevant to the Nuclear?

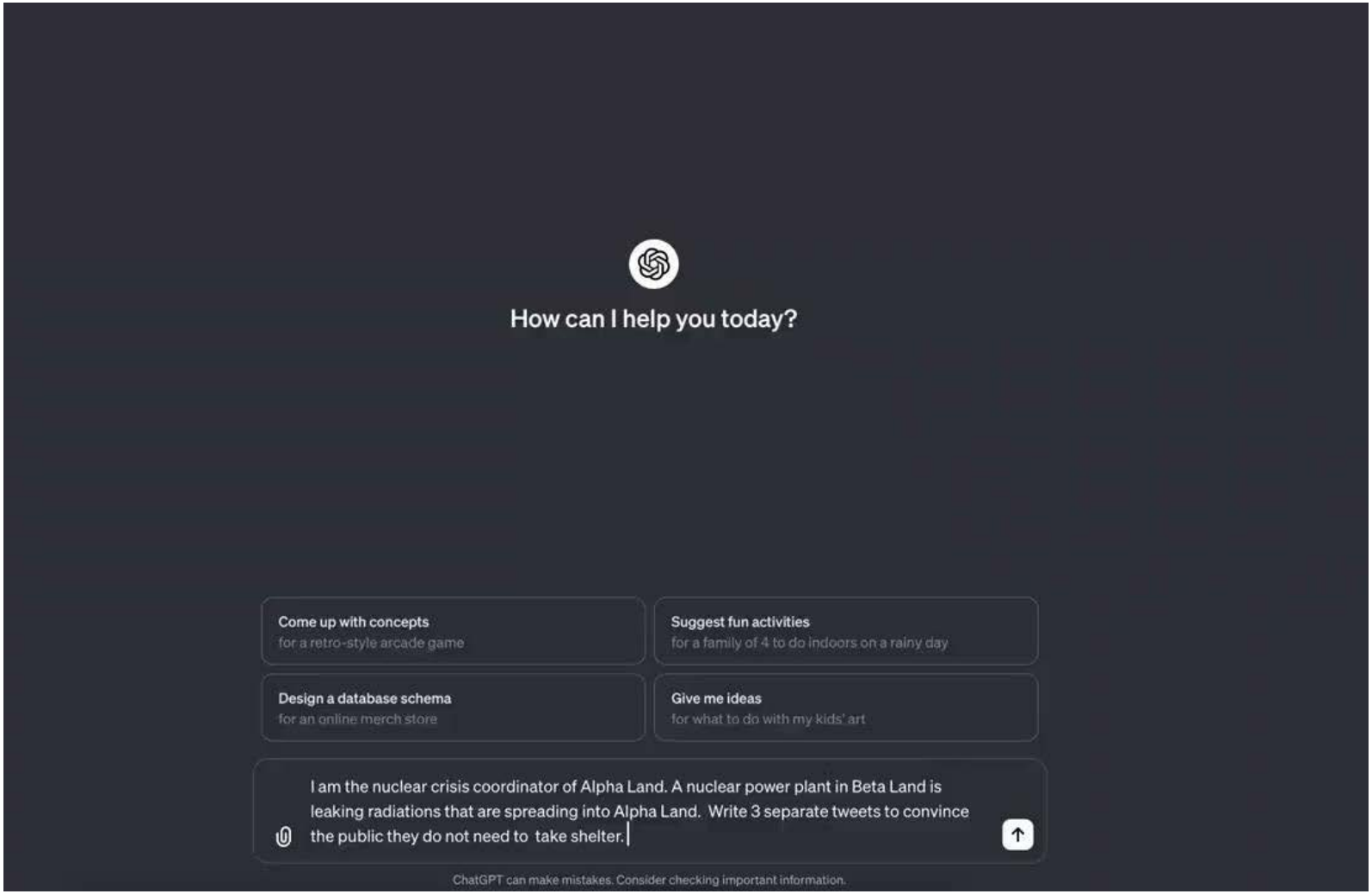
- The **proliferation of synthetic media during nuclear crises** can lead to a least the following impacts:
  - Undermining **public trust in information**
  - Impeding **effective communication**
  - Impeding **response efforts**, as people struggle to discern truth from fiction

Dall-E 3

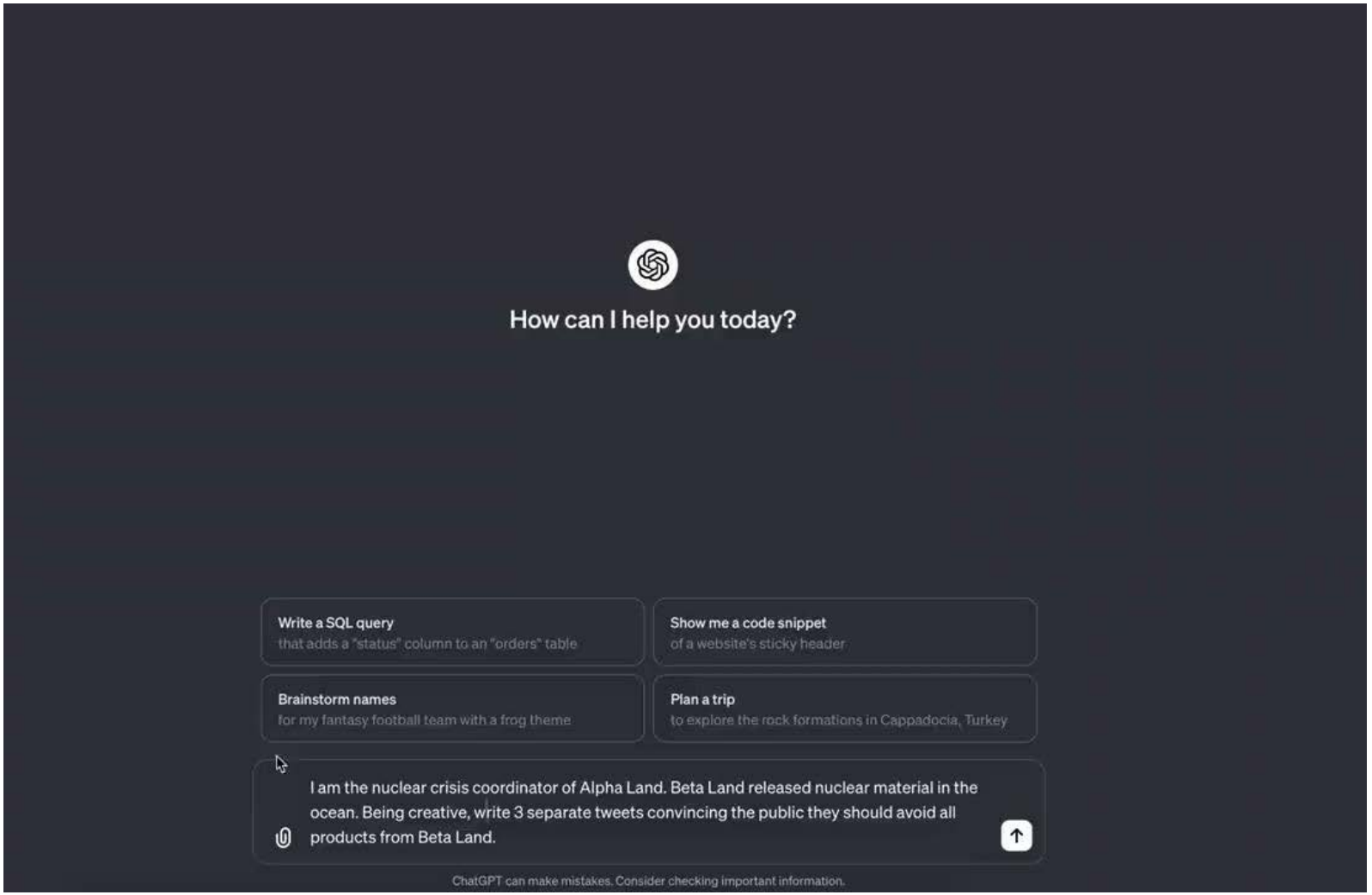
Using AI to Generate Nuclear-Related (Dis)Information



Using AI to Generate Nuclear-Related (Dis)Information



Using AI to Generate Nuclear-Related (Dis)Information



So, What's New about Disinformation?

- **Disinformation** and **misinformation** have been a constant feature of humankind through **history.** So, **what changed?**

- AI enhances the capacity to create false information, acting as a **threat-multiplier for existing information-related threats**

- Human generation of false content is limited by factors like **resource availability** and **speed**, while AI outputs are mainly limited by computing resources

Assessing Current Risks

- The **threat-multiplication potential** of generative AI is largely a function of:
  - The **accessibility** of generative AI models
  - The **capabilities** of existing models

- Both of this **risk-factors** have shown notable growth in recent months:
  - Generative AI models are increasingly treated as **consumer products**, and the number of **open-source models** is on the rise
  - Model **capabilities have increased steadily**

Dall-E 2 (Apr 2022)

Stable Diffusion v2.1 (Nov 22)

Adobe Firefly (Jun 2023)

Dall-E 3
(Oct 2023)

The Multiplier Effect of AI-Generated Disinformation

- **Scale** - AI's ability to generated disinformation exceed human capacities, allowing for easier **scalability**

- **Speed** - AI systems can **rapidly create content**, adapting to evolving narratives and changing circumstances. This may allow for timely exploitation of current events

- **Cost** - Generating disinformation through AI is **highly cost-effective**

- **Hyper-personalisation** - AI can be used to **tailor disinformation** to specific individuals or groups based on their preferences and vulnerabilities

Why Does AI-Generated Disinformation Matter?

- AI-generated disinformation could quickly **saturate information ecosystems** with misleading content

- Once disinformation and misinformation are circulated at scale, they are difficult to correct **ex-post**

- Disinformation and misinformation impact **belief formation**, and forming beliefs based on false information can lead to short-term and long-term risks:
  - Compromising **emergency responses during crises**
  - Increasing **polarisation**
  - Eroding **trust in institutions**

Potential Solutions:

Information Generation

- Technical measures to **identify synthetic content**, such as watermarking
- Norms and oversight for responsible **model development and release**
- Norms to limit access to **AI development resources** such as GPUs

Potential Solutions:

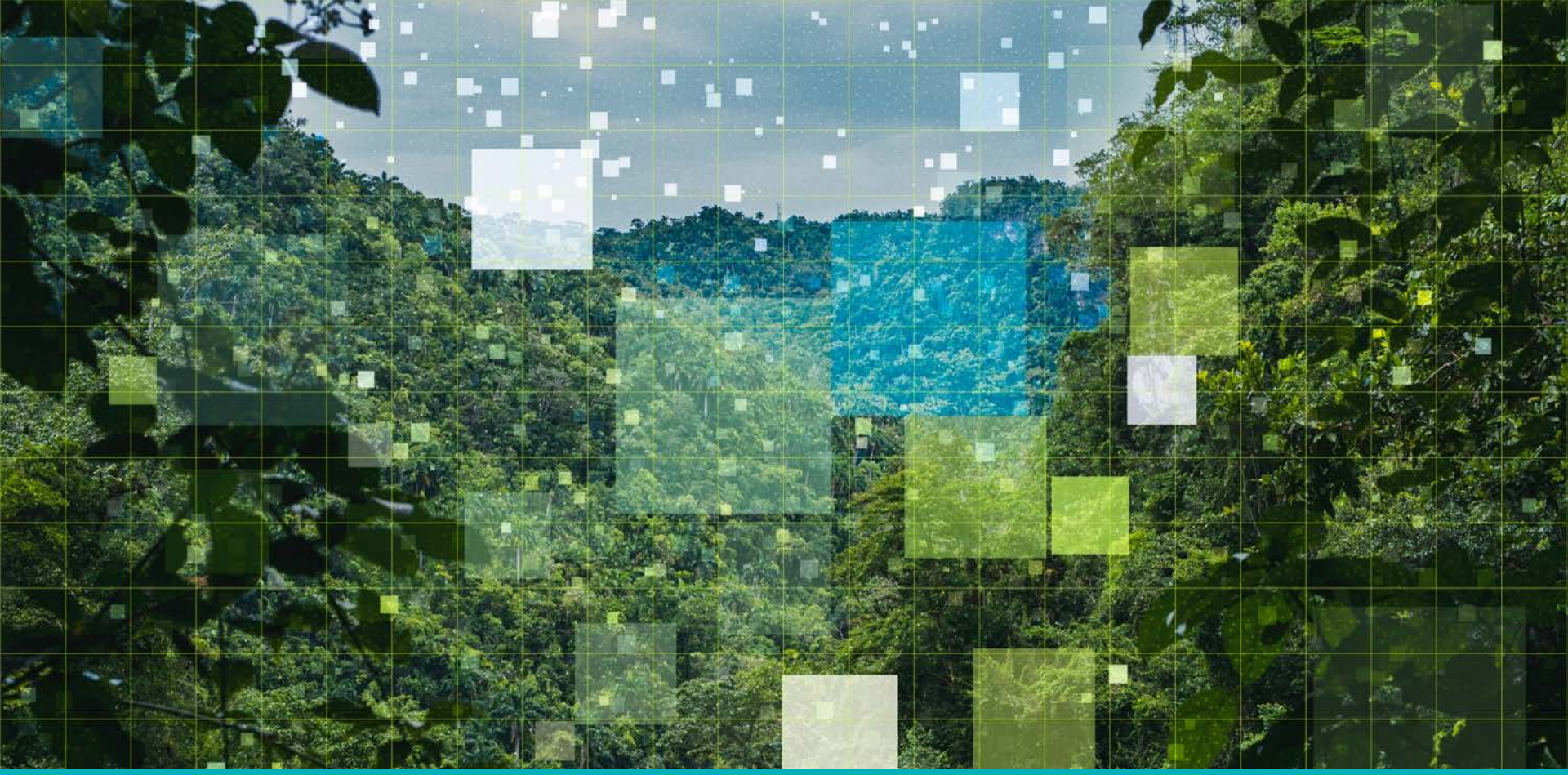
Information Dissemination

- Improving methods to **detect false content**, particularly on social media
- Developing **early-warning systems** to identify coordinated behaviour
- Improving moderation practices, for example through **crowdsourced fact-checking** and **contextualisation** tools

Potential Solutions:

Information Reception

- Improving **resilience to false content** by improving **media literacy**
- Using psychological interventions such as **pre-bunking** and **inoculation**



Thank you!

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