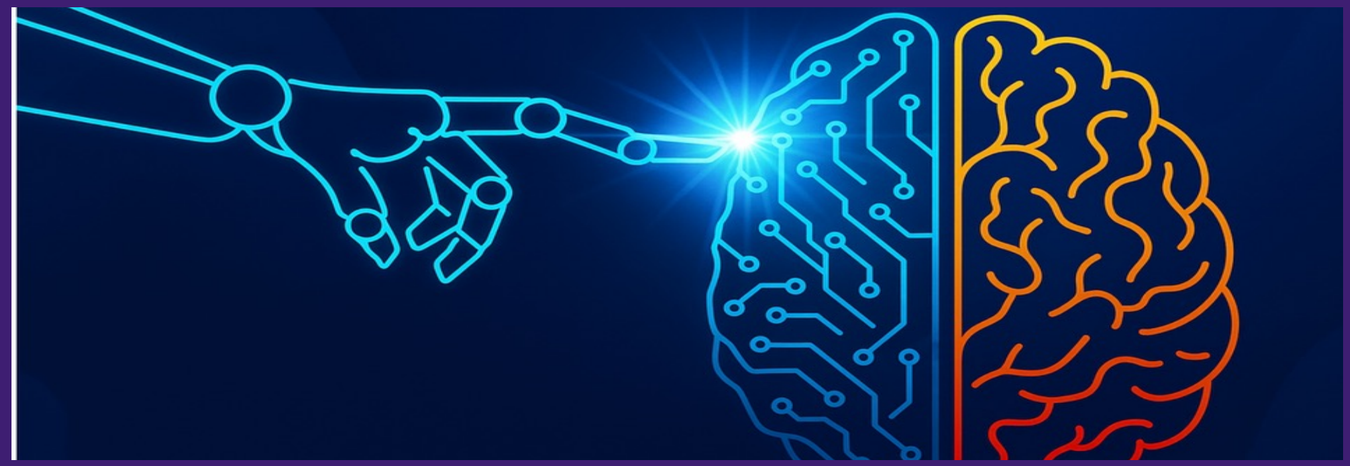
What Every Researcher Should Know about Responsible Research With Generative AI

Finnish Software Engineering Doctoral Research Network (FAST-Sprint 6)



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Agenda

Research and Generative AI

Responsible Use Frameworks

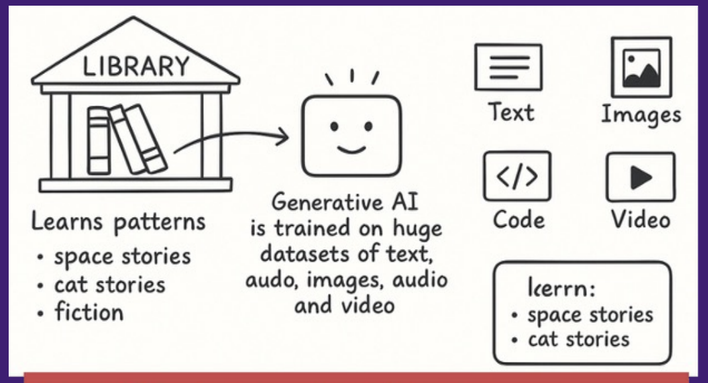
Activities

Shared Takeaways

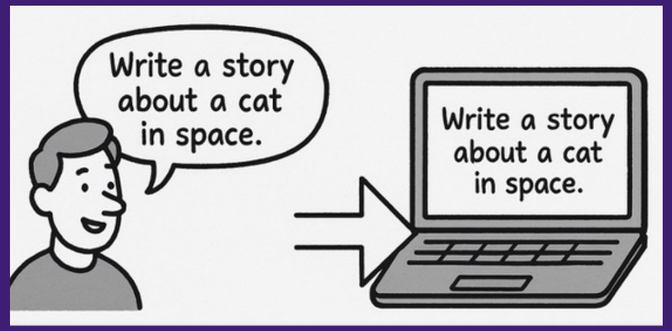
THE RESEARCH CYCLE

How many of you are NOT using GEN AI?

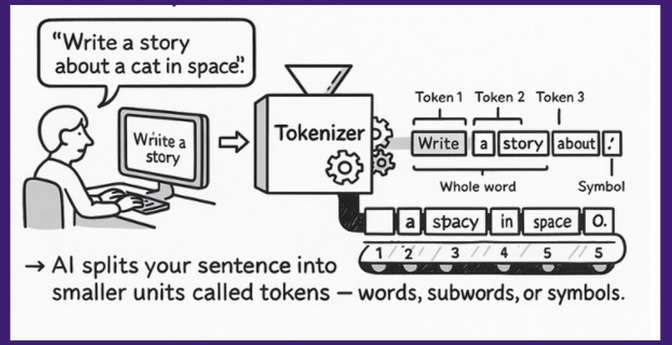
How Gen AI Works



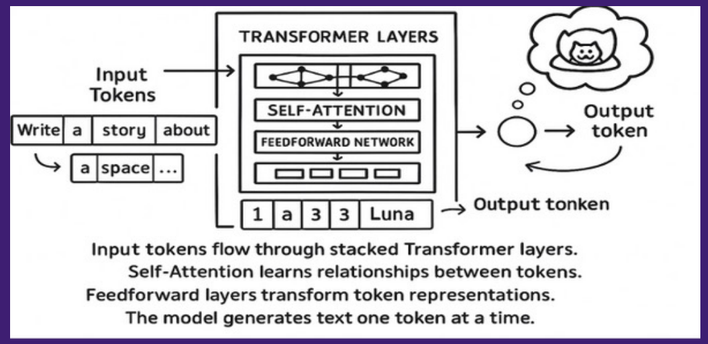
Learning from Lots of Data



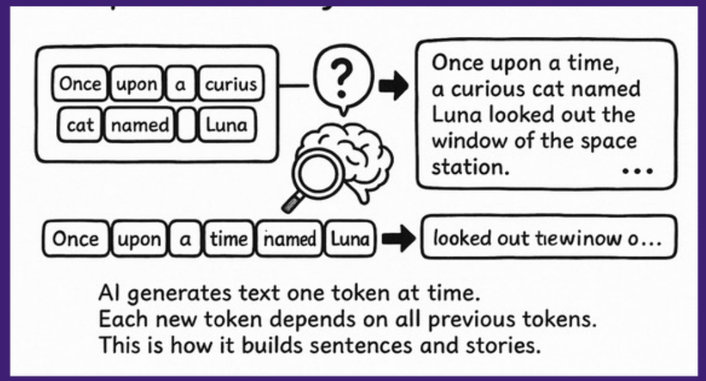
Step 1: User Prompt



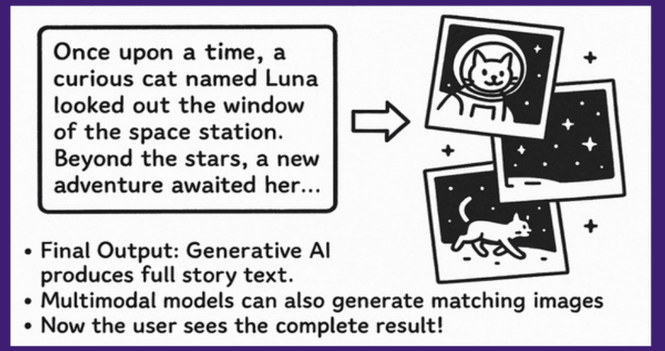
Step 2: Tokenization



Step 3: Learning Relationships



Step 4: Token-by-Token Generation



Step 5: Final Output Generation

Pros and Cons

Pros

- Faster writing and revision
- Accelerated code and data generation
- Improved translation and language
- Synthesizing literature across domains
- Visualizing and summarizing complex information

HIDDEN PLAGIARISM

Cons

- Hallucinated or unverifiable content
- Overconfidence in AI outputs
- Integrity gap: Undisclosed AI contribution
- Reduced critical thinking and methodological rigor
- Sensitive data leaks in prompts

GENAI Misuse..

- Many publishers and journals (e.g, Springer Nature, Elsevier, Wiley, Taylor & Francis, and IEEE) have recently retracted dozens of papers due to undisclosed use of generative AI, duplication, or fabricated content,

- These cases reveal risks such as plagiarism, hallucinated references, and false data.

- Publishers now require AI-use disclosure and stronger human oversight.

Detection

- Tools: GPTZero, Turnitin AI Detection , Copyleaks , PlagiarismCheck.ai
- Human Checks: AI disclosure, editorial verification, and ethics review
- Limitation: Detectors not fully reliable, human judgment essential

Source: Retraction Watch, 2025, Enago, 2024, SpringerOpen, 2024 — DOI:10.1007/s00146-024-02090-z

Responsible Use of Generative AI in Research

Based on Finnish national board on research integrity(TENK ,2023)

&

Eu living guidelines (2025)

The Compass of Responsible Research

Integrity

Always verify AI outputs and sources before using them

Transparency

Clearly disclose when and how AI tools were used in your research.

Accountability

You remain responsible for all content, data, and results produced with AI assistance.

Responsible AI = Human Judgment + Transparency + Verification

Fairness

Be aware of potential bias and ensure equal, respectful treatment of people and data.

Privacy & Human Oversight

Protect confidential data and maintain human control in all research decisions.

Recommendations For Researcher

1. **Remain ultimately responsible for scientific output**

   Example: *If GENAI summarizes a source incorrectly, you are still accountable for that error.*

2. **Use generative AI transparently.**

   Example: *Methods section: Draft summaries were generated with ChatGPT (GPT-4, 2025) and verified manually*

3. **Protect privacy, confidentiality, and intellectual property when using AI tools.**

   Example: *When using AI tools to analyze project documentation, do not include proprietary algorithms or business-sensitive content to prevent intellectual property leaks.*

4. **Respect applicable national, EU and international legislation**

   Example: *Check GDPR compliance before uploading research data to cloud-based GEN AI tools.*

5. **Continuously learn how to use generative AI tools properly to maximise their benefits, including by undertaking training.**

   Example: *Take your university's "AI in Research Integrity" micro-course (usualy 30 min) or join a GenAI reading group.*

6. **Avoid using generative AI in sensitive tasks like peer review or proposal evaluation**

   Example: *Never use AI to review a paper or evaluate a grant proposal , it breaches confidentiality.*

Source: EU living guidelines

Publisher Policies on Generative AI (Summary)

Publisher / Body	Core Policy Summary
IEEE	AI tools can assist **but *cannot* be listed as authors**; usage must be clearly disclosed in acknowledgements or methods.
Elsevier	Authors **must disclose tool name, version, and purpose in** a “Declaration of Generative AI Use” section; authors remain fully responsible.
Springer Nature	AI cannot hold authorship; any use that influences content must be declared and **verified by human authors**.
ACM	Authors must include an **explicit declaration of AI use**; all responsibility for accuracy and integrity lies with human contributors.
Wiley / Taylor & Francis	**Disclosure of AI involvement is mandatory**; undisclosed or AI-only text constitutes research misconduct.

Where to Find the Full Policies

Publisher / Organisation	Official Policy or Reference Link
IEEE	Author Guidelines for AI-Generated Text (IEEE Open)
IEEE RAS	Guidelines for Generative AI Usage (Robotics & Automation Society)
Elsevier	Elsevier Author Policy – AI Declaration Guidance (SMU Library summary)
Springer Nature	Editorial Policies on AI and Authorship
ACM	https://www.acm.org/publications/policies/new-acm-policy-on-authorship
Wiley	Wiley Generative AI Policy (PDF, Sept 2023)
Taylor & Francis	T&F Generative AI and AI-Assisted Tech Policy
SAGE Publishing	SAGE AI Author Guidelines

Your Homework

Search for: “AI Policy,” “Generative AI in Research,” or “Responsible AI Guidelines” of your university

Group Activity

Group Activity

Think • Discuss • Decide — Responsible or Risky?

Problem Identification & RQs

- When is it acceptable to use GenAI for brainstorming ideas or refining research questions?
- What could go wrong if you rely too much on it?

Literature Review & Study Design

- Can GenAI summarize or organize literature responsibly?
- What are the risks of bias, misrepresentation, or false citations?

Data Collection & Analysis

- Could GenAI support data cleaning, coding, or pattern recognition?
- Where might it compromise confidentiality or validity?

Writing & Publication

- When is AI-assisted writing helpful vs unethical?
- What must be disclosed in a paper or thesis?

What might be the personal or institutional consequences?

Activity Guidelines

Group formation: 5 min | Discussion: 20 min | Reporting: 15 min

1. **Form groups of 5–6 participants.**
2. **Select a moderator and a note-taker.**
3. **Discuss the given questions together.**
4. **Focus on both responsible and risky practices — what feels acceptable, what doesn't, and why.**
5. **Agree on 3–4 key takeaways from your discussion**
6. **Prepare a 2-minute summary to share with everyone.**
7. **You can also send the slides on muhammad.waseem@tuni.fi for sharing takeaways**

Let’s take a break