AI and Education: a Multi-Faceted Relation

Enrico Nardelli

Univ. Roma "Tor Vergata"

Director National Lab "Informatics & School" of CINI

President of Informatics Europe

A.I. and Democratic Sustainability

Wien, 3-5 July 2023

Digitale & Società

ENRICO NARDELLI

La rivoluzione informatica

Conoscenza, consapevolezza e potere nella società digitale

EDIZIONI THEMIS

Cognitive Machines

- Industrial machines boost physical capabilities

- Cognitive capabilities

- Relate, concatenate, and process representations of facts to derive new representations

- Manipulating symbols whose meaning is unknown, by executing instructions whose meaning is unknown, produces symbols that have meaning for humans

Generative AI systems

- Produce data from other data with a level of competence similar to that of humans

- Intelligence is in the brain of the reader

- We project onto their outputs the meaning which is within us

- Not all technologies can be freely used by everyone

Their use in education

- Allowing our children to use generative AI systems in an unrestricted way before their full development means undermining their chances of growth on the cognitive level

- Not prohibition, but awareness and education

- Based on the principles of Digital Humanism

    - e.g. selecting which facts to represent and how to code them is not without consequences

    - e.g. deciding processing algorithms and weight of their parameters is not without consequences

The bottom line

- Informatics Reference Framework for School
www.informaticsforall.org/the-informatics-reference-framework-for-school-release-february-2022/

- Always keep human being in control

- Always keep human society in control

- Fatigue is a necessary and unavoidable component of training oneself to become competent in a certain field

- To ban tools that can relieve of intellectual fatigue does not make sense unless there is an educational motivation

Conclusion

- **Creative production = generating + filtering**

- Generative AI tools can help instructors in generating

  – plans for lessons and courses

  – exercises and exams

  – material for students' practice

  – presentations for lecture and research papers

  – text → summaries

  – table of content → text

Knowledge and responsibility

Responsibility and knowledge

THANKS!

Enrico Nardelli

Univ. Roma "Tor Vergata"

http://www.mat.uniroma2.it/~nardelli/

@enriconardelli

http://www.linkedin.com/in/enriconardelli

https://www.facebook.com/enrico.nardelli