DRIVES

Development and Research on Innovative Vocational Education Skills

U1 ARTIFICIAL INTELLIGENCE OVERVIEW

U1.E5. THE PHILOSOPHICAL PROBLEMS SURROUNDING ARTIFICIAL INTELLIGENCE: ISSUES, CONCERNS AND ETHICAL CONSIDERATIONS

Computer Vision Expert

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LEARNING OBJECTIVES

The student is able to

CVE.U1.E5.PC1	Recognize and critically understand the issues and ethical concerns surrounding artificial intelligence.
CVE.U1.E5.PC2	Think of ways to solve or diminish those issues and ethical concerns.

CHALLENGES OF ARTIFICIAL INTELLIGENCE

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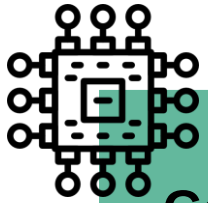
Data Quality

Black Box Effect



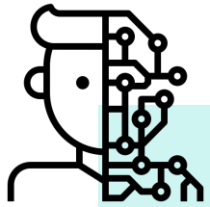
Computing Power

Legal Issues

Integration

Trustability

CHALLENGES OF ARTIFICIAL INTELLIGENCE



AI-Human Interaction

Investment + Cost

Expectations

Ethical Issues

Transparency

Narrow Focus

ARTIFICIAL INTELLIGENCE ISSUES

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High Cost

Creation of artificial intelligence requires huge costs as they are very complex machines. Their repair and maintenance require huge costs.

Making Humans Lazy

AI is making humans lazy with its applications automating the majority of the work. Humans tend to get addicted to these inventions which can cause a problem to future generations.

Unemployment

As AI is replacing the majority of the repetitive tasks and other works with robots.

ARTIFICIAL INTELLIGENCE ISSUES

No Emotions

Machines cannot develop a bond with humans which is an essential attribute when it comes to Team Management.

No Original Creativity

This is not the force of AI. While AI can help you design and create, it is no match to the power of thinking that the human brain has or even the originality of a creative mind.

Machines do not Understand Ethics

Morality is absent in a machine, and it is also hard to design and convey through technology.

ETHICAL ISSUES: ARISING FROM MACHINE LEARNING

Privacy and Data protection

- Lack of privacy;
- Misuse of personal data;
- Security problems.

Reliability

- Lack of quality data;
- Lack of accuracy of data;
- Problems of integrity.

Transparency

- Lack of accountability and liability;
- Bias and discrimination;
- Lack of accuracy of predictive recommendations;
- Lack of accuracy of non-individual recommendations.

ETHICAL ISSUES: LIVING IN A DIGITAL WORLD

Economic Issues

- Disappearance of jobs;
- Concentration of economic power;
- Cost to innovation.

Justice and fairness

- Contested ownership of data;
- Lack of access to public services;
- Violation of fundamental human rights of end users in supply chain;
- Negative impact on vulnerable groups.

Safety

- Harm to physical integrity of humans, animals and infrastructures.

ETHICAL ISSUES: LIVING IN A DIGITAL WORLD

Freedom

- Lack of access and freedom of information;
- Loss of human decision-making;
- Loss of freedom and individual autonomy.

Broader societal issues

- Power asymmetries;
- Negative impact on democracy;
- Lack of informed consent;
- Lack of trust;
- Potential for military use;
- Negative impact on health;
- Reduction of human contact;
- Negative impact on environment.

Uncertainty issues

- Unintended, unforeseeable adverse impacts;
- Prioritization of the "wrong" problems;
- Potential for criminal and malicious use.

ETHICAL ISSUES: METAPHYSICAL ISSUES

The term “metaphysical” means the issues that are directly linked to fundamental aspects of reality, of the nature of being and human ability to make sense. Also, they go to the heart of the nature of humans and humanity.

Machine consciousness

"Awakening" of AI

Autonomous moral agents

Super-intelligence

Singularity

Changes to human nature

BEST PRACTICES TO SOLVE OR DIMINISH ETHICAL CONCERNS/ISSUES

In the development phase, technology should meet social and ethical responsibilities, also regulations and certification of autonomous systems have to change.

According to **Susan Etlinger** "*In order for AI technologies to be truly transformative in a positive way, we need a set of ethical norms, standards and practical methodologies to ensure that we use AI responsibly and to the benefit of humanity*."

BEST PRACTICES TO SOLVE OR DIMINISH ETHICAL CONCERNS/ISSUES

Transparency

AI developers have an ethical obligation to be transparent in a structured and accessible way. For example, Google (as well as other tech giants) has an AI-specific blog that enables them to spread its AI knowledge to the world.

Explainability

Explanation is required about how the algorithms arrive to predictions to overcome ethical issues that arise with inaccurate predictions or how these algorithms reach a conclusion and what factors affected the decision.

BEST PRACTICES TO SOLVE OR DIMINISH ETHICAL CONCERNS/ISSUES

Alignment

There is no legal framework adapted to the recent developments in AI. Modernizing legal frameworks will clarify the path to ethical AI development.

Inclusiveness

Increasing diversity of the AI community is key to improve model quality and reduce bias. This can help solve problems such as unemployment and discrimination which can be caused by automated decision making systems.

SUMMARY

- Artificial Intelligence has many challenges such as Data Quality, Integration, Legal Issues, Ethical issues, Transparency and others.

- The ethical issues of machine learning are immediate and the metaphysical are long-term, if not perpetual, questions. The category of issues arising from living in the digital world is located somewhere between.

REFFERENCES

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Thank you for your attention

DRIVES project is project under **The Blueprint for Sectoral Cooperation on Skills in Automotive Sector**, as part of New Skills Agenda.

The aim of the Blueprint is **to support an overall sectoral strategy and to develop concrete actions to address short and medium term skills needs.**

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