IEEE, Ethically Aligned Design, P70xx Standards and Certification Programme

LSA 2019 - Lübeck Summer Academy

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Ethics, Principles & Practice

A Short Overview and Awareness Raising Workshop

Overview of the Talk

- Definitions and Clarifications

- Principal Ethical Paradigms

- Emerging Guidance & Standards

- The Ethics Certification Programme

- Way Forward

Definitions I

➢ Ethics

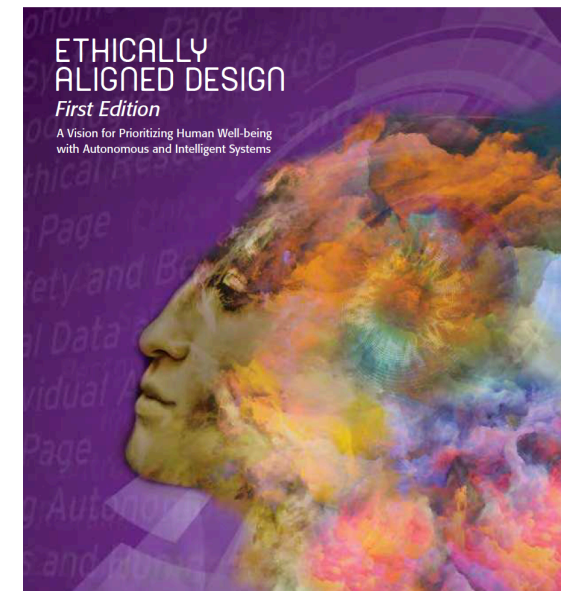A branch of knowledge that deals with moral principles (that govern a person's behaviour)

➢ Morals

Considerations of right & wrong behaviour (acceptable in a particular society/culture)

IEEE Ethically Aligned Design-EAD

EAD Pillars		
Universal Human Values	**Political Self-Determination Data Agency**	**Technical Dependability**
Human Rights ■	■	
Well-being ■	■	
Data Agency ■	■	■
Effectiveness		■
Transparency ■	■	■
Accountability ■	■	■
Awareness of Misuse		■
Competence		■

EAD General Principles

IEEE
Advancing Technology for Humanity

ETHICALLY ALIGNED DESIGN
First Edition
A Vision for Prioritizing Human Well-being with Autonomous and Intelligent Systems

IEEE-EAD: Ethically Aligned Design-Principles

1. **Human Rights**–A/IS shall be created and operated to respect, promote, and protect internationally recognized human rights.
2. **Well-being**–A/IS creators shall adopt increased human well-being as a primary success criterion for development.
3. **Data Agency**–A/IS creators shall empower individuals with the ability to access and securely share their data, to maintain people's capacity to have control over their identity.
4. **Effectiveness**–A/IS creators and operators shall provide evidence of the effectiveness and fitness for purpose of A/IS.
5. **Transparency**–The basis of a particular A/IS decision should always be discoverable.
6. **Accountability**–A/IS shall be created and operated to provide an unambiguous rationale for all decisions made.
7. **Awareness of Misuse**–A/IS creators shall guard against all potential misuses and risks of A/IS in operation.
8. **Competence**–A/IS creators shall specify and operators shall adhere to the knowledge and skill required for safe and effective operation.

EAD General Principles

Human Rights
Well-being
Data Agency
Effectiveness
Transparency
Accountability
Awareness of Misuse
Competence

IEEE P7000- Standard

Model Process for Addressing Ethical Concerns During System Design

➤ Purpose

  ➤ help to create a shared mission around values, value priorities

   and value harms to avoid &

  ➤ help to assure value based system engineering, by building a

   bridge between the value mission and the actual development

   of a system.

Draft IEEE P7000 - Process

➤ **Ethical Mission Analysis**
  ➤ Define System of Interest and Context of Use
  ➤ Collect unstructured Ideas as Harms & Benefits and weight these
  ➤ Use Life Cycle as per ISO/IEC TR24748-1:2010

➤ **Value Needs Refinement**
  ➤ Identify Harms and Benefits' Underlying Values
  ➤ Conceptually Investigate Value Qualities

➤ **Value Risk Management**
  ➤ Treat Value Qualities as System Qualities at Risk
  ➤ Analyse, Evaluate and Treat Risks
  ➤ Identify and select System Controls for all System Qualities at Risk

P7000 WG Structure

Chair & VC

Technical Editor

Secretary

Sub-Groups; Ethics, Process, Risk, SoS & Ontology

56+ WG members

IEEE-P7000 Suite

P7000 - Model Process for Addressing Ethical Concerns During System Design

P7001 - Transparency of Autonomous Systems

P7002 - Data Privacy Process

P7003 - Algorithmic Bias Considerations

P7004 - Standard for Child and Student Data Governance

P7005 - Standard for Transparent Employer Data Governance

P7006 - Standard for Personal Data Artificial Intelligence (AI) Agent

P7007 - Ontological Standard for Ethically Driven Robotics and Automation Systems

P7008 - Standard for Ethically Driven Nudging for Robotic, Intelligent and Autonomous Systems

P7009 - Standard for Fail-Safe Design of Autonomous and Semi-Autonomous Systems

P7010 - Wellbeing Metrics Standard for Ethical Artificial Intelligence and Autonomous Systems

P7011 - Standard for the Process of Identifying and Rating the Trustworthiness of News Sources

P7012 - Standard for Machine Readable Personal Privacy Terms

P7013 - Inclusion and Application Standards for Automated Facial Analysis Technology

https://standards.ieee.org/

The Ethics Certification Program for Autonomous & Intelligent Systems-ECPAIS

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MAC ADDRESS

The Ethics Certification Program for Autonomous and Intelligent Systems (ECPAIS)

Developing metrics and processes towards the implementation of a certification methodology addressing transparency, accountability and algorithmic bias

< Industry Connections

The Ethics Certification Program for Autonomous and Intelligent Systems

About

The goal of The Ethics Certification Program for Autonomous and Intelligent Systems (ECPAIS) is to create specifications for certification and marking processes that advance transparency, accountability and reduction in algorithmic bias in Autonomous and Intelligent Systems (A/IS).

The Ethics Certification Program for Autonomous & Intelligent Systems-ECPAIS

Expert Focus Groups - Formation

1) Experts self-declare interests and competencies

2) Three Expert Focus Groups for:

   1) Accountability (AEFG)

   2) Algorithmic Bias (BEFG)

   3) Transparency (TEFG)

# The Ethics Certification Program for Autonomous & Intelligent Systems-ECPAIS

Schedule & Targets

➢ All three Expert Focus Groups progressing on Target

➢ Expected to have Interim Outcomes by mid-late July 2019

➢ Process Trials:

  ➢ Members can Volunteer real-world Use Cases/Case Studies

  ➢ ECPAIS will support Use Case Specification with bespoke Template

  ➢ Interim Trials run by any of the Expert Focus Groups' Processes

  ➢ Outcome shared with Members as Value from Support & Participation

Way Forward

➢ Humanity's destiny is increasingly intertwined

➢ Aim for public good should sit alongside/ transcend commercial gains

➢ Ethical Approach will have bottom line impact

➢ Need to go beyond conformity with minimum (Legal) Requirements

➢ Need A Holistic Auditable Systems Approach
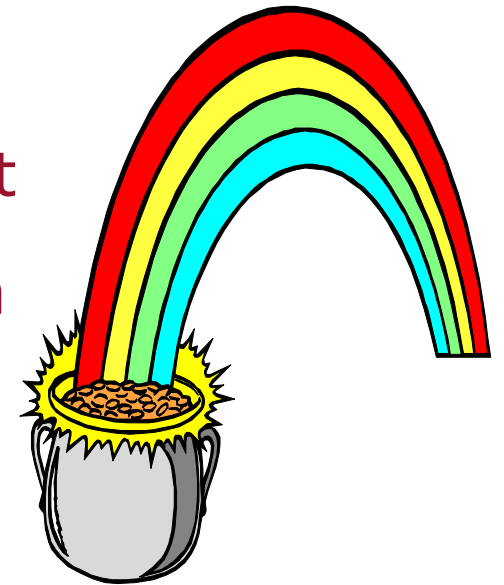
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