

**IEEE SA**

STANDARDS  
ASSOCIATION

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# IEEE SA – ADVANCING TECHNOLOGY FOR THE BENEFIT OF HUMANITY

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STANDARDIZATION ACTIVITIES FOR AUTONOMOUS AND INTELLIGENT SYSTEMS

# RAISING THE WORLD'S STANDARDS

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## About IEEE SA

- Consensus-building organization within IEEE that develops and advances global technologies - through facilitation of standards development and collaboration
- Promotes innovation, enables creation and expansion of international markets; helps protect health, public safety
- Drives functionality, capabilities and interoperability of a wide range of products and services that transform the way people live, work and communicate



## Mission

Provide a high-quality, market-relevant standardization environment that is respected world-wide

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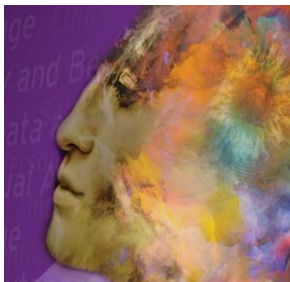
# IEEE ACTIVITIES IN A/IS AND ETHICS

Our Work: Putting principles into practice



## Community

- 3000 members from all continents
- 40% women
- Participation & endorsement by industry
- Recognition by governments & international organizations



## Ethically Aligned Design

- Provides guidance for standards, certification, regulation, & serves as a reference for the work of policymakers, industry members, technologists, & educators



## “EAD For” Series

- Business
- Artists
- Health
- Parenting
- Advertising



## Standards

- Nearly 30 AI/AS standards projects in development of which 15 are ethically oriented
- Included in the ethically oriented standards is IEEE P7000, which establishes a process model by which engineers & technologists can address ethical considerations



## Certification

Criteria and process for Certification / marks addressing:

- Transparency in A/IS
- Accountability in A/IS
- Algorithmic Bias in A/IS



## Education and learning

- AI & Ethics in Design Business Course
- EAD University Consortium
- Engagement and collaboration with governments, municipalities and intergovernmental fora (EU, EC, CoE, OECD, UN orgs, NYC, Vienna, Espoo, ...)



# IEEE SA TECHNICAL STANDARDS

P3652.1™ - GUIDE FOR ARCHITECTURAL FRAMEWORK AND APPLICATION OF FEDERATED MACHINE LEARNING

P2807™, P2807.1™ - KNOWLEDGE GRAPHS (FRAMEWORK, EVALUATION)

P1872.2™ - STANDARD FOR AUTONOMOUS ROBOTICS (AUR) ONTOLOGY

P2040™ - STANDARD FOR CONNECTED, AUTOMATED AND INTELLIGENT VEHICLES: OVERVIEW AND ARCHITECTURE

P2040.1™ - STANDARD FOR CONNECTED, AUTOMATED AND INTELLIGENT VEHICLES: TAXONOMY AND DEFINITIONS

P2660.1™ - RECOMMENDED PRACTICES ON INDUSTRIAL AGENTS: INTEGRATION OF SOFTWARE AGENTS AND LOW LEVEL AUTOMATION FUNCTIONS

P2418.4™ - STANDARD FOR THE FRAMEWORK OF DISTRIBUTED LEDGER TECHNOLOGY (DLT) USE IN CONNECTED AND AUTONOMOUS VEHICLES (CAVS)

P2751™ - 3D MAP DATA REPRESENTATION FOR ROBOTICS AND AUTOMATION

PC37.249™ - GUIDE FOR CATEGORIZING SECURITY NEEDS FOR PROTECTION AND AUTOMATION RELATED DATA FILES

P2672™ - GUIDE FOR GENERAL REQUIREMENTS OF MASS CUSTOMIZATION

P2812™ - GUIDE FOR MINOR GUARDIANSHIP SYSTEM FOR ONLINE MOBILE GAMING

P1589™ - STANDARD FOR AN AUGMENTED REALITY LEARNING EXPERIENCE MODEL

P2247.1™, P2247.2™, P2247.3™ - ADAPTIVE INSTRUCTIOINAL SYSTEMS (CLASSIFICATION, INTEROPERABILITY, AND EVALUATION)

P2830™ - STANDARD FOR TECHNICAL FRAMEWORK AND REQUIREMENTS OF SHARED MACHINE LEARNING

P3333.1.3™ - STANDARD FOR THE DEEP LEARNING-BASED ASSESSMENT OF VISUAL EXPERIENCE BASED ON HUMAN FACTORS

# IEEE SA IMPACT STANDARDS

IEEE P7000™ – MODEL  
PROCESS FOR  
ADDRESSING ETHICAL  
CONCERNS DURING  
SYSTEM DESIGN

IEEE P7001™ –  
TRANSPARENCY OF  
AUTONOMOUS SYSTEMS

IEEE P7002™ – DATA  
PRIVACY PROCESS

IEEE P7003™ –  
ALGORITHMIC BIAS  
CONSIDERATIONS

IEEE P7004™ –  
STANDARD ON CHILD  
AND STUDENT DATA  
GOVERNANCE

IEEE P7005™ –  
STANDARD ON  
EMPLOYER DATA  
GOVERNANCE

IEEE P7006™ –  
STANDARD ON  
PERSONAL DATA AI  
AGENT

IEEE P7007™ –  
ONTOLOGICAL  
STANDARD FOR  
ETHICALLY DRIVEN  
ROBOTICS AND  
AUTOMATION SYSTEMS

IEEE P7008™ –  
STANDARD FOR  
ETHICALLY DRIVEN  
NUDGING FOR ROBOTIC,  
INTELLIGENT AND  
AUTONOMOUS SYSTEMS

IEEE P7009™ –  
STANDARD FOR FAIL-  
SAFE DESIGN OF  
AUTONOMOUS AND SEMI-  
AUTONOMOUS SYSTEMS

IEEE P7010™ –  
WELLBEING METRICS  
STANDARD FOR ETHICAL  
ARTIFICIAL  
INTELLIGENCE AND  
AUTONOMOUS SYSTEMS

IEEE P7011™ –  
STANDARD FOR THE  
PROCESS OF  
IDENTIFYING & RATING  
THE TRUST-WORTHINESS  
OF NEWS SOURCES

IEEE P7012™ –  
STANDARD FOR  
MACHINE READABLE  
PERSONAL PRIVACY  
TERMS

IEEE P7013™ –  
INCLUSION AND  
APPLICATION  
STANDARDS FOR  
AUTOMATED FACIAL  
ANALYSIS TECHNOLOGY

IEEE P7014™ – STANDARD  
FOR EMULATED EMPATHY IN  
AUTONOMOUS AND  
INTELLIGENT SYSTEMS

# OTHER RELEVANT STANDARDS RELATING TO DATA

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## Global Initiative to Standardize Fairness in the Trade of Data

- Focus on three principles:
  - Data Agency
  - Data Ethics
  - Data Equity



## Digital Inclusion, Identity, Trust, and Agency (DIITA) Program

- Workstreams include work on:
  - Privacy by Design
  - Dignity in Gaming



## IEEE P2089 - Standard for Age Appropriate Digital Services Framework - Based on the 5Rights Principles for Children

EAD for Parenting

# WE INVITE YOU TO CONNECT WITH US.

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