AI regulations under the EU AI Act in critical urban systems

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1. Introduction

The AI4X abstract provides an overview of AI regulations under the EU AI Act, focusing on high-risk classifications in critical infrastructures, drones, and emotional recognition. The document outlines compliance requirements, exemptions, and ethical considerations to ensure transparency and safety.

2. Substantial section

2.1 Critical Infrastructures

The EU AI Act categorizes AI systems used in critical infrastructures as high-risk due to their potential impact on public health, safety, and economic stability. These infrastructures include digital networks, road traffic management, and essential utilities such as water, gas, heating, and electricity.

Examples of Critical Digital Infrastructure:
- Internet exchange points
- DNS service providers
- Cloud computing services
- Public electronic communications networks

Safety Components:
- AI-powered monitoring systems for water pressure
- Fire alarm control systems

Exceptions to High-Risk Classification: Certain AI systems are exempt if they do not significantly impact decision-making or fundamental rights, including:
- AI systems performing narrow procedural tasks such as document classification
- AI that refines written documents without altering meaning
- AI identifying inconsistencies in human decision-making without affecting final assessments
- AI assisting in data organization for human evaluations

To ensure compliance, providers must document risk assessments and register AI systems in the EU database. The European Commission will provide guidelines to clarify distinctions between high-risk and exempt AI systems.

2.2 Drones

AI systems used in drones are classified as high-risk if they function as safety components or require third-party conformity assessments under EU harmonization laws.

Compliance Obligations:
- Providers must integrate AI-specific and broader regulatory requirements
- AI testing and documentation must align with EU safety standards

2.3 Emotional Recognition

The EU AI Act prohibits the use of AI for emotion recognition in workplaces and educational institutions, except for medical or safety purposes. This measure aims to prevent misuse and ensure ethical deployment.

High-Risk AI Practices:
- Remote biometric identification
- Biometric categorization based on sensitive attributes
- Emotion recognition relying on biometric data

Transparency Requirements:
- Deployers must inform individuals about AI system operation
- Compliance with GDPR and other EU regulations is mandatory

Acknowledgments

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