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AI – an introduction

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DEFINITION

ARTIFICIAL INTELLIGENCE

Artificial Intelligence refers to the ability of software and robots to mimic the natural intelligence of humans and other animals.

Colloquially, AI is often used to describe machines that perform "cognitive" functions, such as "learning" and "problem solving".

AI is also a scientific field dedicated to the study and design of artificial agents.

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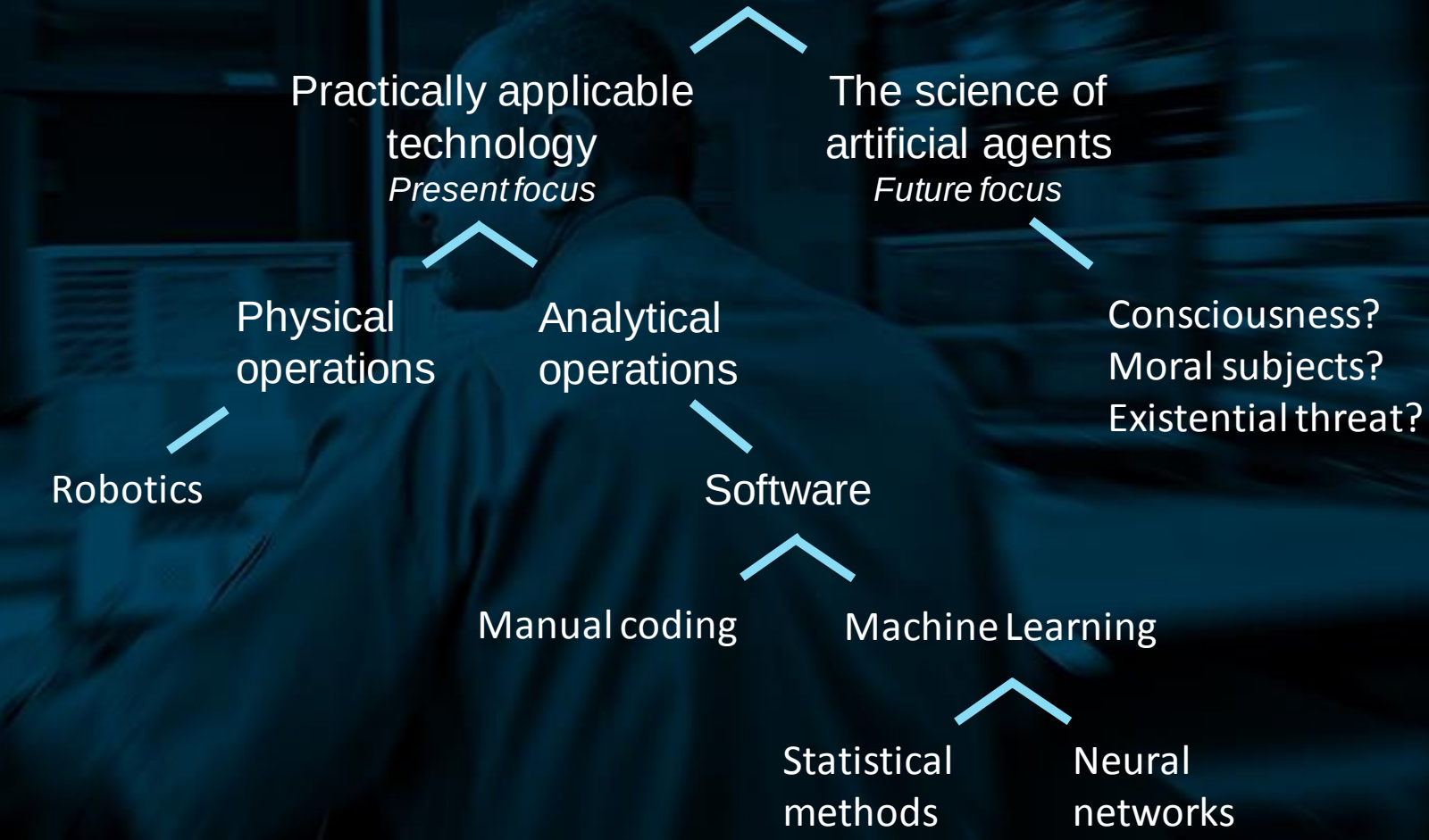
AI



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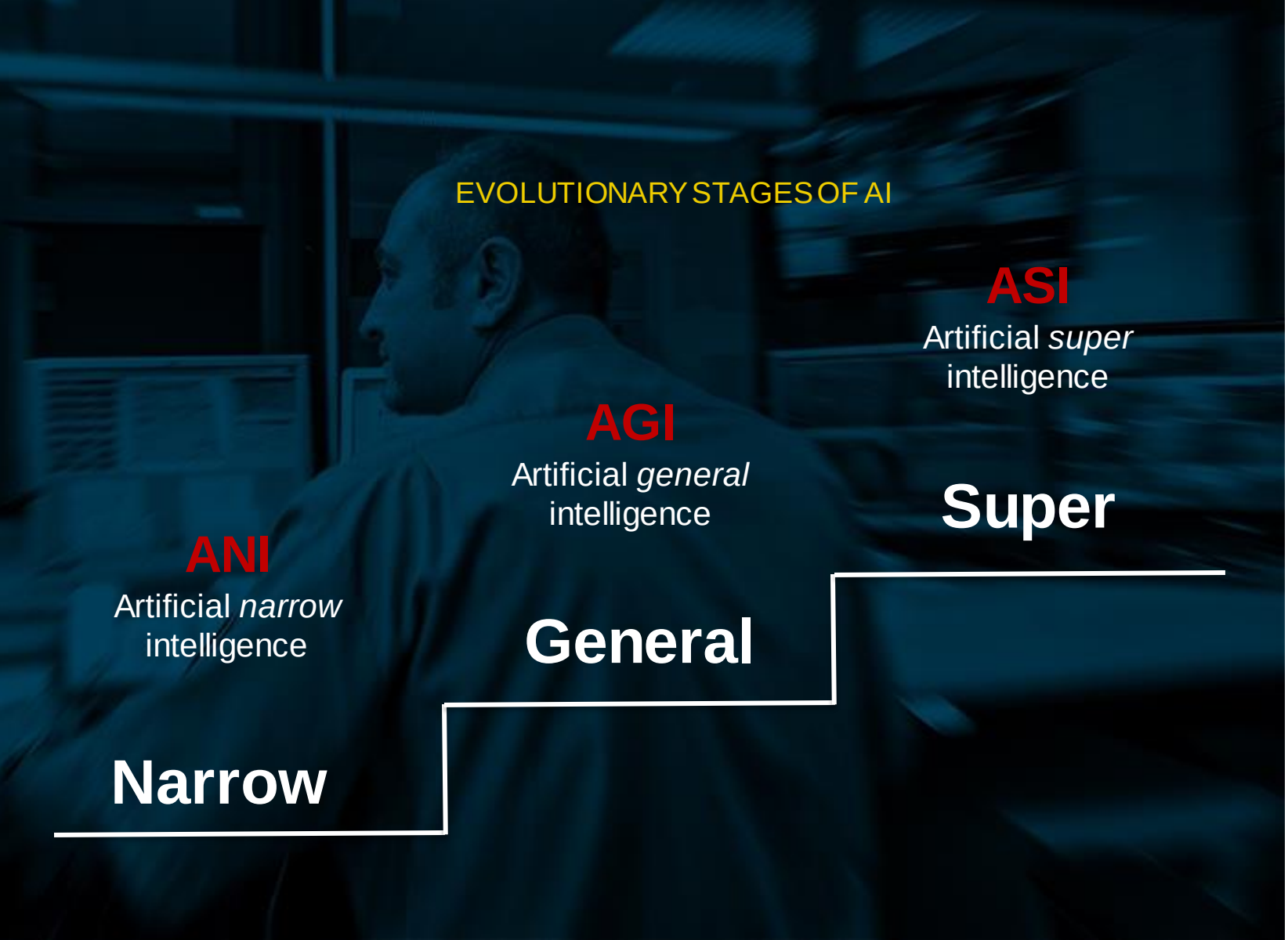

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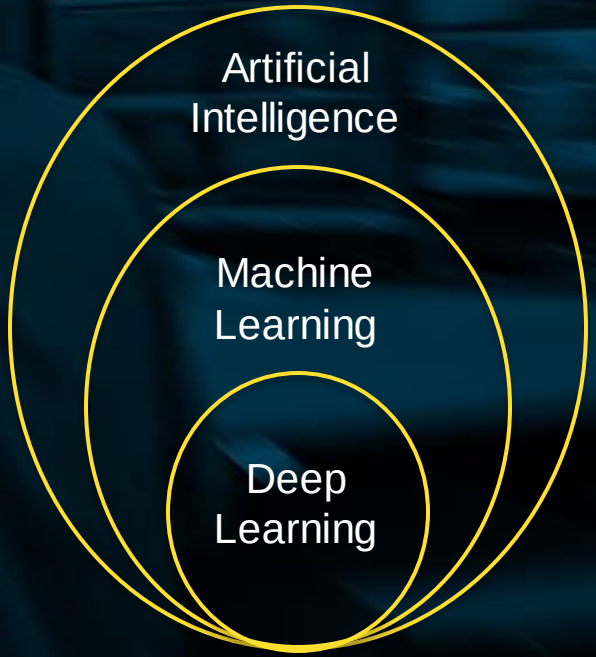
DEFINITION

MACHINE LEARNING

Conventional system development is based on human problem-solving capabilities and programming skills. With machine learning, algorithms "learn" autonomously how to solve a specific problem by using vast amounts of data and extensive trial-and-error, often producing novel insights and super human capabilities.



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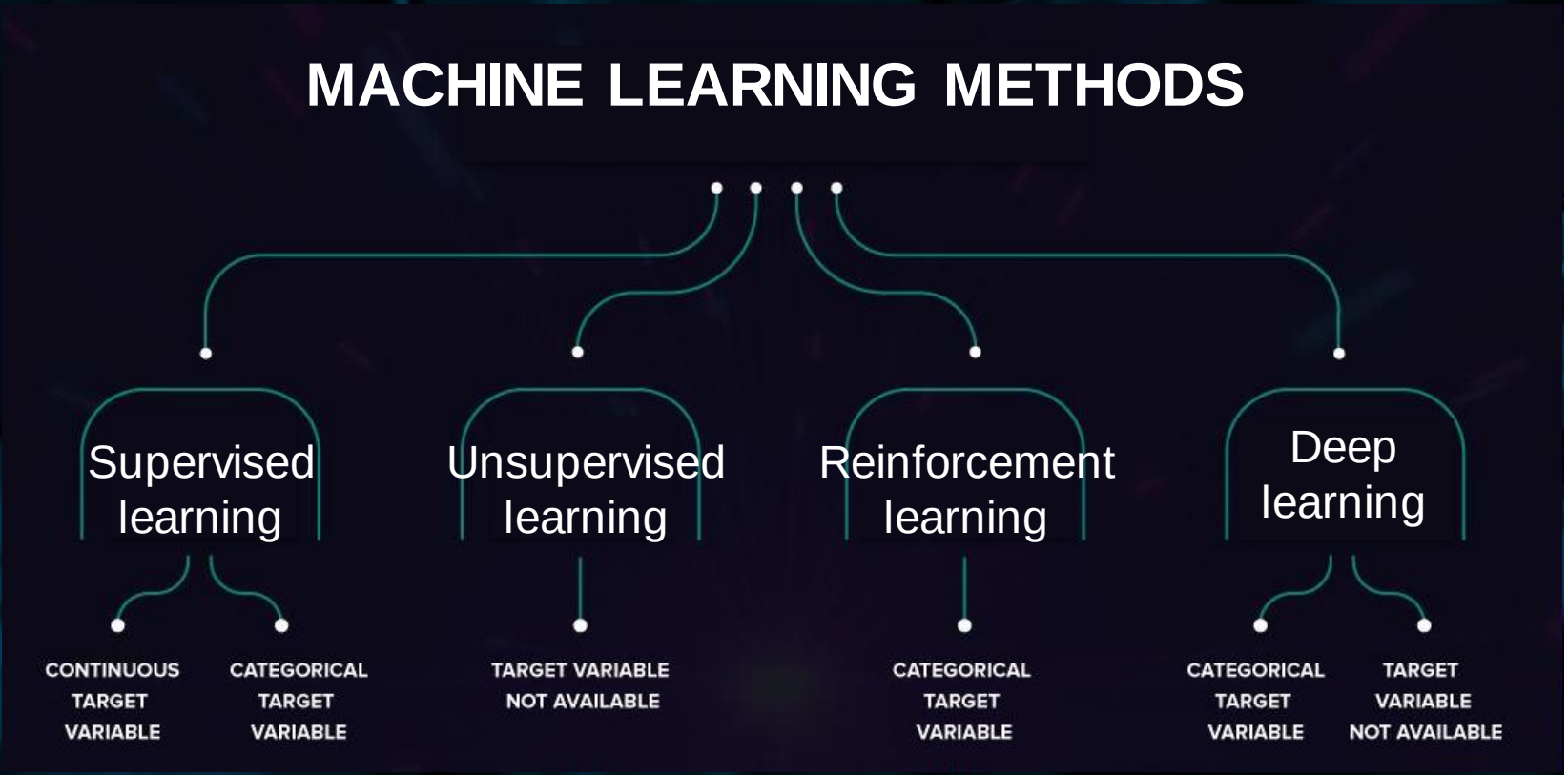
MACHINE LEARNING METHODS



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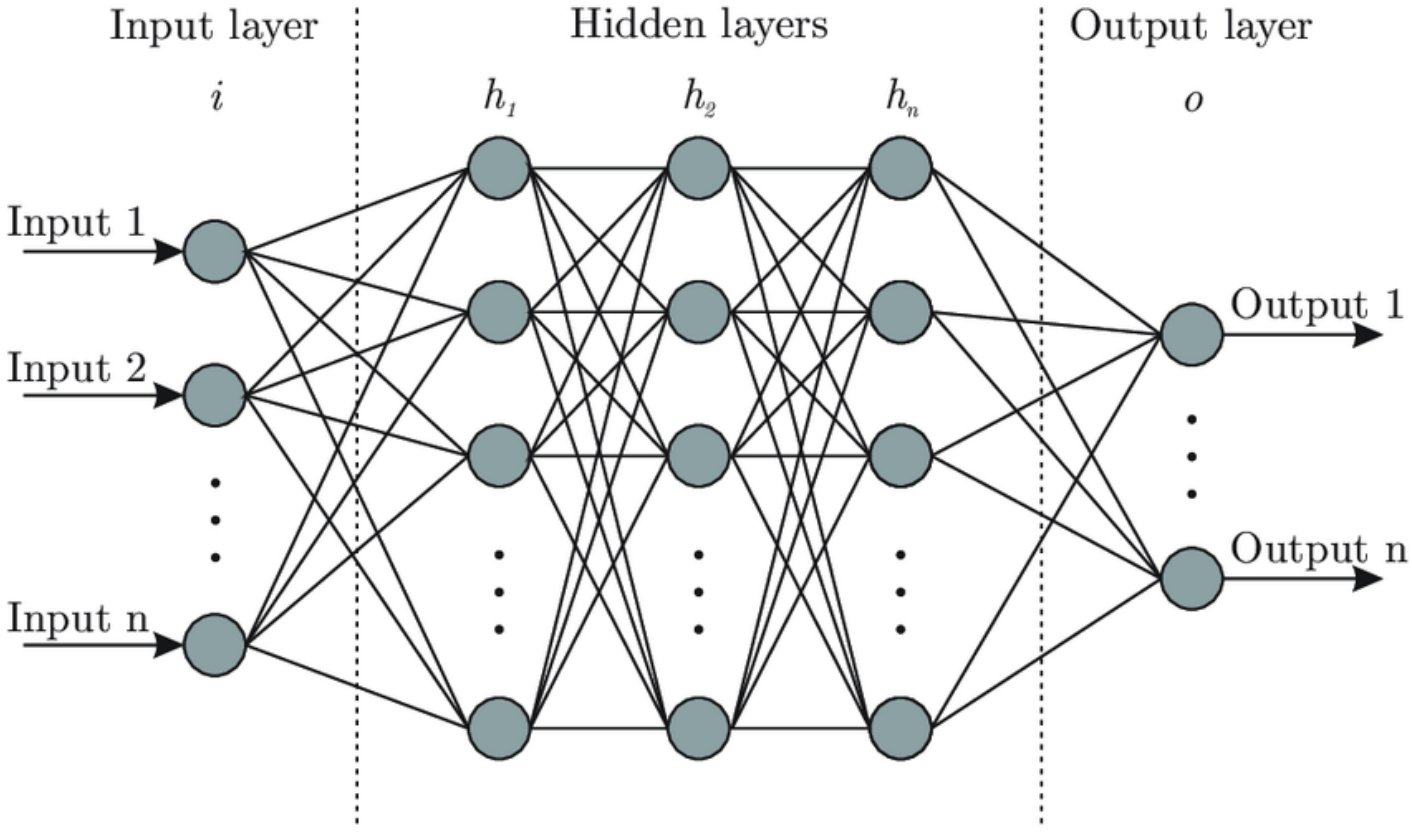
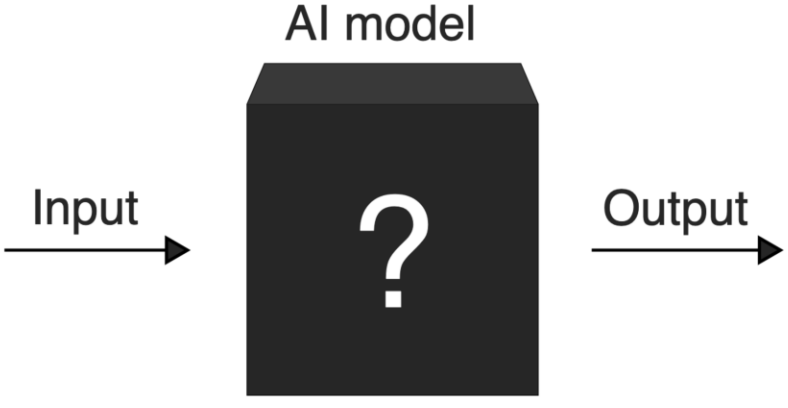
NEURAL NETWORK



THE BLACK-BOX PROBLEM

The tendency of machine learning models, especially neural networks, of becoming incomprehensible to human observers, including its developers.



ETHICAL CHALLENGES OF AI

INTEGRITY

Effective AI-systems require vast amounts of data. Still, practitioners of AI must respect client's personal integrity and the proprietary nature of data.

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ETHICAL CHALLENGES OF AI

BIAS

AI-developers have found that machine learning models tend to pick up on social bias present in the training data. If the data is not diverse enough, models may become unjust.

ETHICAL CHALLENGES OF AI

POWER & CONTROL

AI-models could potentially be used for extremely effective surveillance and behavioral control. However, uniquitous monitoring may affect the wellbeing of inmates and excessive control measures may evolve into oppression.

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ETHICAL CHALLENGES OF AI

DIGNITY

Development of AI-technologies may require experimentation and a certain degree of participation from inmates. Therefore, respect for persons and informed consent must be a cornerstone of AI-implementation in probation.

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POTENTIAL ETHICAL GAINS OF AI

Effectivity

Automation, precision, speed and scalability of processes implies lower expenditure and a better prison service overall.

Prevention

AI-systems capable of detecting undue behavior and alerting officers may lower criminality, suicides, violence and smuggling of contraband.

Prediction

The power of machine learning may be harnessed to generate novel insights and predictions which may be used to decrease recidivism.

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POTENTIAL ETHICAL GAINS OF AI

Intelligence

Data-mining may lead to knowledge that can be shared with other governmental bodies or used in united action with the police.

Justice

Humans are notoriously bad at making fair decisions. We are often prejudiced, inconsistent and often make assessments that are affected by our personal feelings. A well designed AI-system may well lead to greater justice in decision-making processes.

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MITIGATING RISK

DATA QUALITY

Good quality data that is representative and generated with awareness of ethical risks will mitigate the tendency of models to become biased or skewed.

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MITIGATING RISK

KNOWLEDGE & AWARENESS

Mitigating risk starts with being aware of the risks and knowing in what situations they are likely to occur. Education for all organizational members may be required as well as continuous research among specialists.

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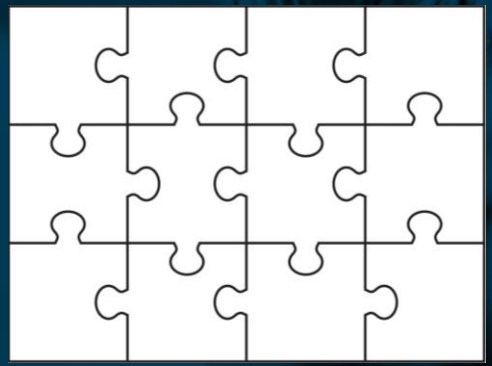
MITIGATING RISK

GOVERNANCE

Management processes and governance structures that align AI-solutions with strategic objectives of the organization. Enhancing performance, mitigating risk and assuring the best interest of all stakeholders.



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MITIGATING RISK

CENTER OF EXCELLENCE

An interdisciplinary team dedicated to maintenance, development and continuous improvement of AI-solutions in the organization, delivering technical functionality and novel insights directed towards achieving organizational goals.

Engineers

Business developers

Social researchers

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MITIGATING RISK

TRANSNATIONAL COOPERATION

Sharing data, insights and best practices across borders will promote effective solutions and wiser implementation of advanced AI in prison service.

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GOVERNANCE OF AI

HUMAN IN THE LOOP

IN THE LOOP

ON THE LOOP

OUT OF THE LOOP

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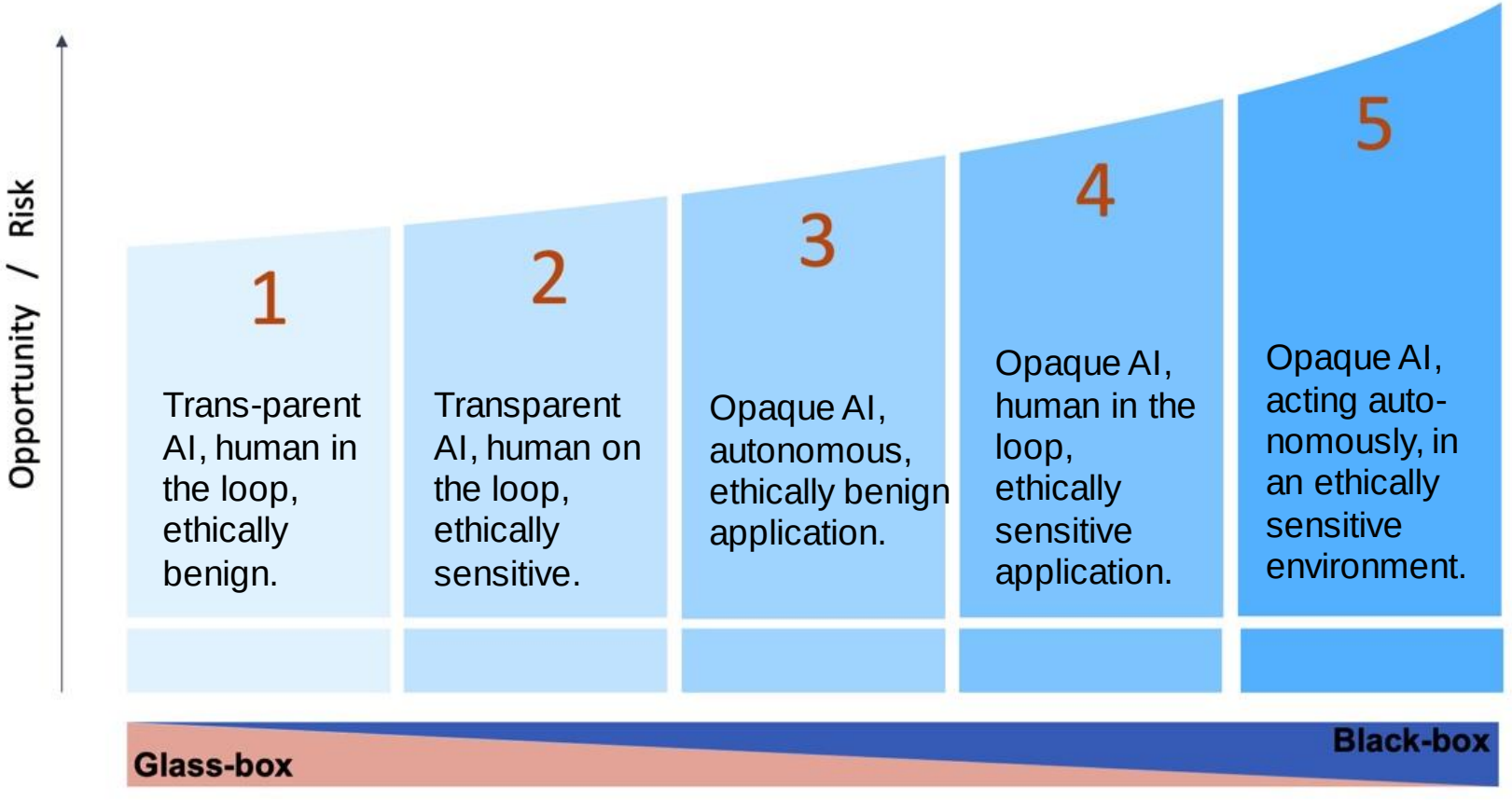
LEVELS OF AI IMPLEMENTATION



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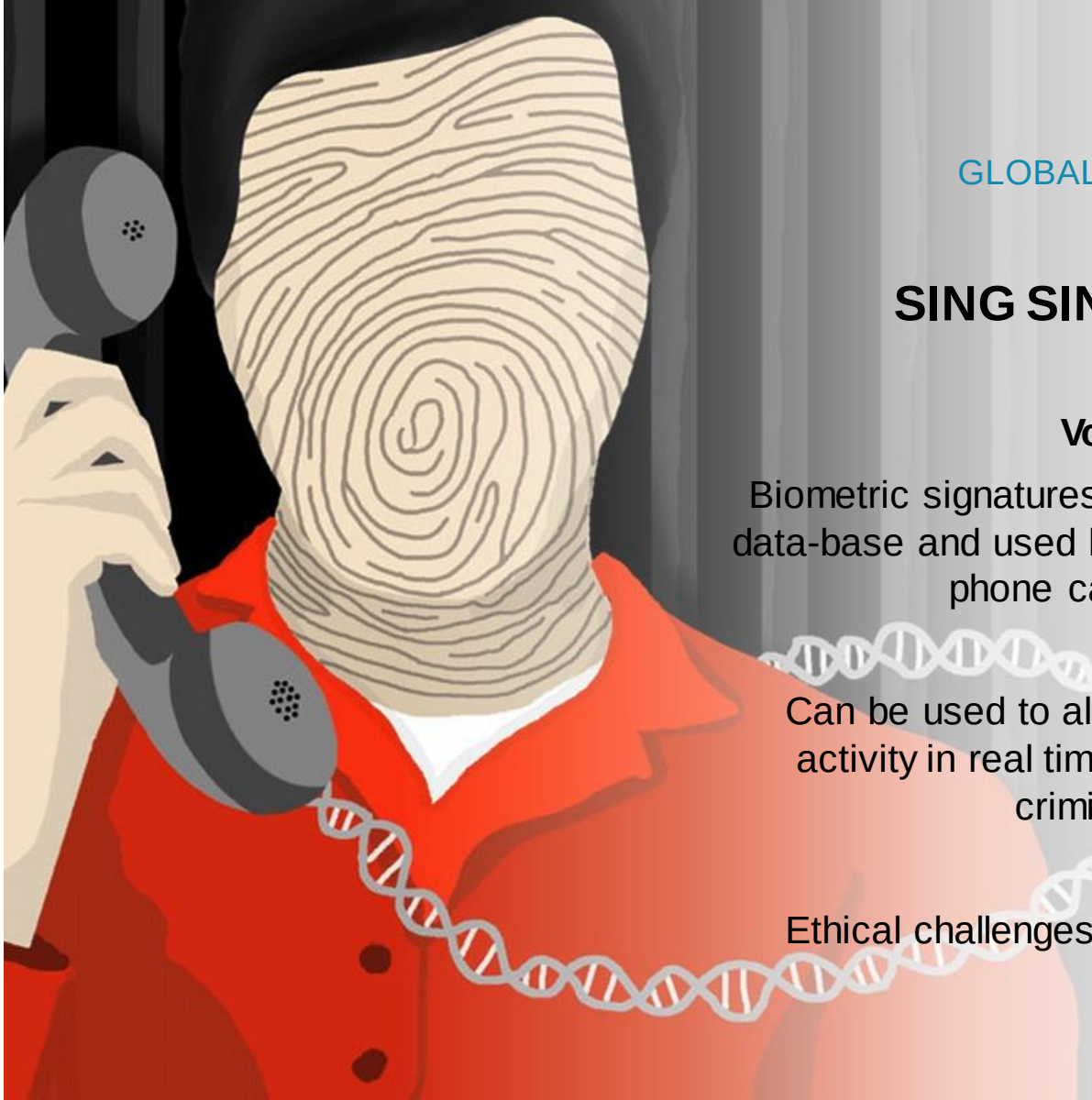

GLOBAL EXAMPLES

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SING SING NEW YORK

Voice Prints

Biometric signatures of voices can be stored in a data-base and used by AI to identify participants of phone call conversations.

Can be used to alert officers of undue phone activity in real time as well as counteracting criminal networks.

Ethical challenges include *integrity* and *bias.*

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GLOBAL EXAMPLES

YANCHENG CHINA

Smart Prison

Surveillance cameras and hidden sensors are monitored by AI in real time using techniques such as facial recognition and analysis of behavioral patterns

Can be used to alert officers of behavior indicating violence, suicide attempts, smuggling or attempts of escape.

Ethical challenges include *integrity* and *power/control*.

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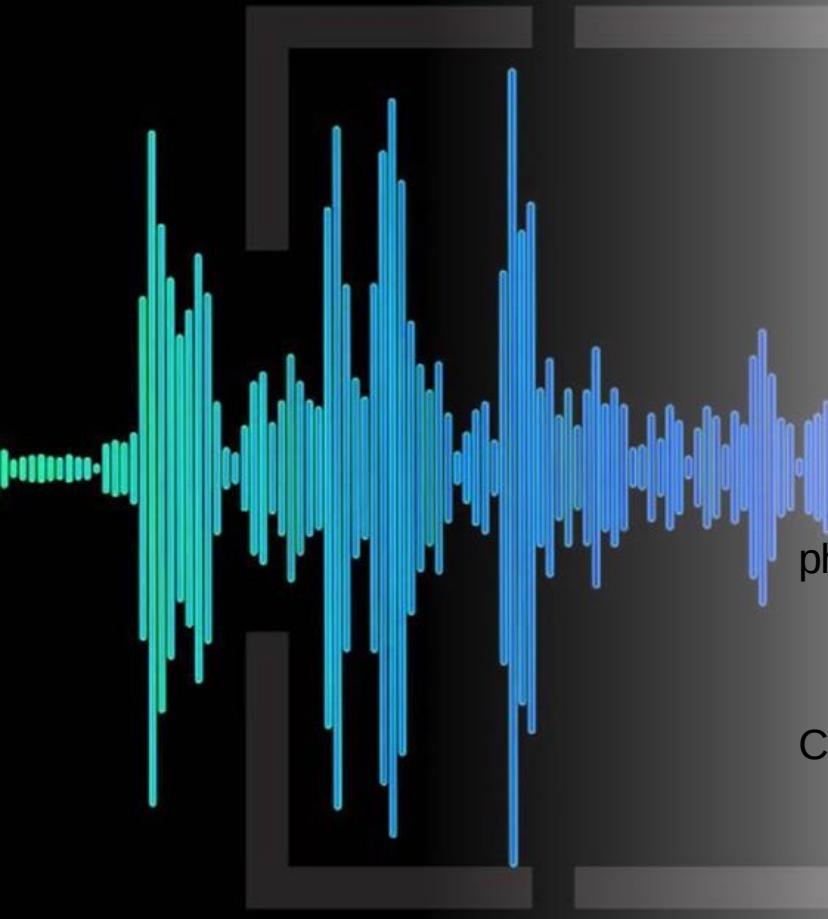

GLOBAL EXAMPLES

CHICAGO

Phone call surveillance

Phone conversations are recorded, stored and analyzed in real time. By recognizing words and phrases AI can detect talk about narcotics, threats, suicide and criminal activity.

Can be used to alert officers in real time as well as providing intelligence by supporting data mining and advanced search.

Ethical challenges include *integrity* and *dignity*.

OTHER USE AREAS

Surveillance & Security

Advanced surveillance and analysis of video cameras, sensors, phone calls and biometric data may be used to prevent suicide, violence, smuggling and riots, promoting greater security overall.

Care

AI-systems may be a powerful factor in reducing recidivism by identifying behavioral patterns that promote wellness. The technology can create individual daily reports, track progress over time as well as detecting deviating behavior.

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OTHER USE AREAS

Prediction & Classification

The precision of machine learning models may be harnessed to make predictions about recidivism risk. This may be used as a basis for more effective treatment and classification.

Optimization of processes

Resource intensive processes such as transportation could potentially reach new levels of optimization by using AI technology. Automation and precision may as well bring greater performance were AI is applied.

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