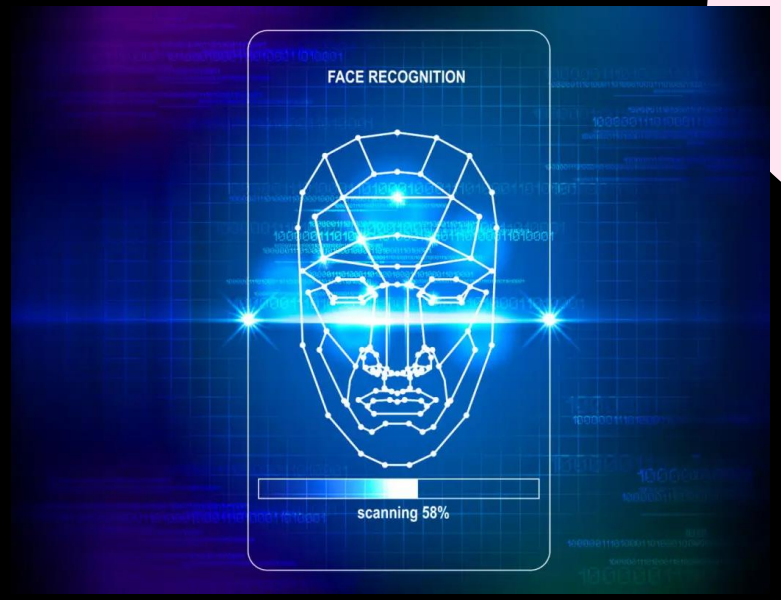
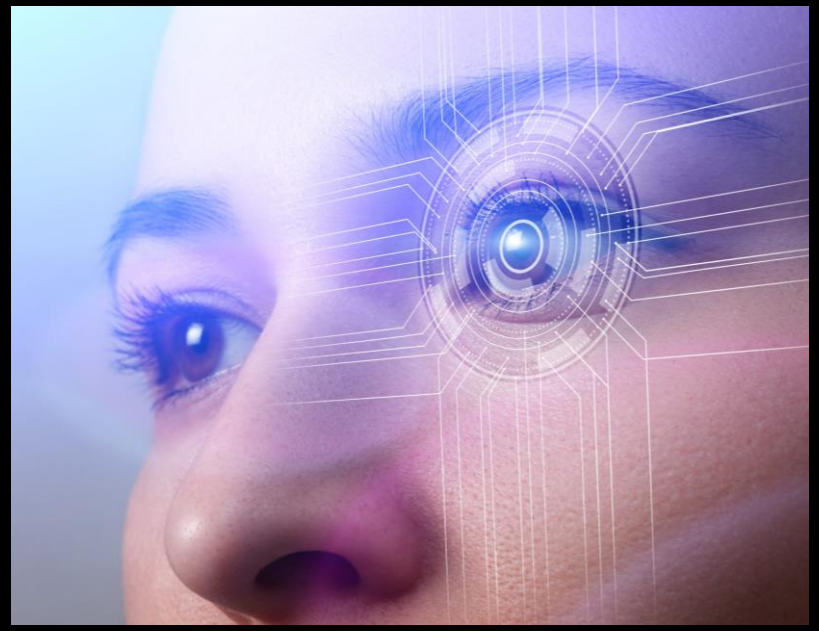
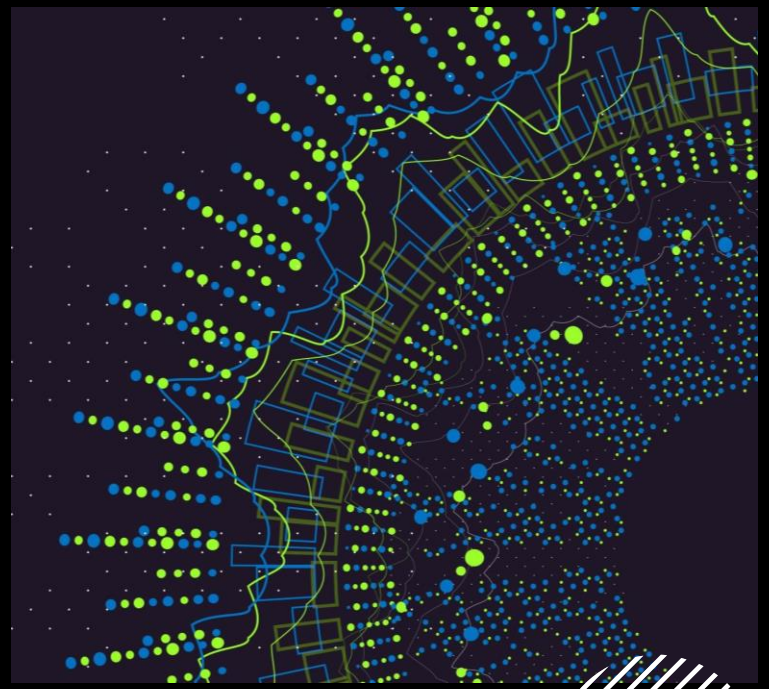
FACIAL AND RETINAL RECOGNITION AI

MADALINA CARCEA
STUDENT NO. 22198 9





- In the *Minority Report* movie, I found interesting the way the facial and retinal recognitions were used as an AI tool.
- They illustrate how AI systems can be used for pattern recognition, identification, and surveillance while raising important ethical and legal considerations.



Domains and subdomains

Perception Domain:

- Computer Vision Subdomain: Facial and retinal recognition technologies fall under the subdomain of Computer Vision, as they involve the interpretation and understanding of visual data by AI systems.

Reasoning Domain:

- Pattern Recognition Subdomain: These AI technologies engage in pattern recognition by identifying unique patterns in facial features or retinal patterns for authentication and identification.

Machine Learning and Neural Networks Domain:

Deep Learning Subdomain: Many facial recognition systems use deep learning techniques, such as convolutional neural networks (CNNs), to extract features and make accurate identifications. This connects these technologies to the Deep Learning subdomain of AI.

Privacy and Ethics Domain:

Ethical and Legal Considerations Subdomain: The use of facial and retinal recognition technologies in "Minority Report" raises significant ethical and legal concerns related to privacy and surveillance, making it relevant to the Ethical and Legal Considerations subdomain.

Real-life usage of Facial and Retinal recognition

- Facial recognition technology is commonly used in airport security and border control, with various real-life applications worldwide. However, a comprehensive technical assessment of the technology's capabilities, limitations, and potential challenges is crucial before its implementation.

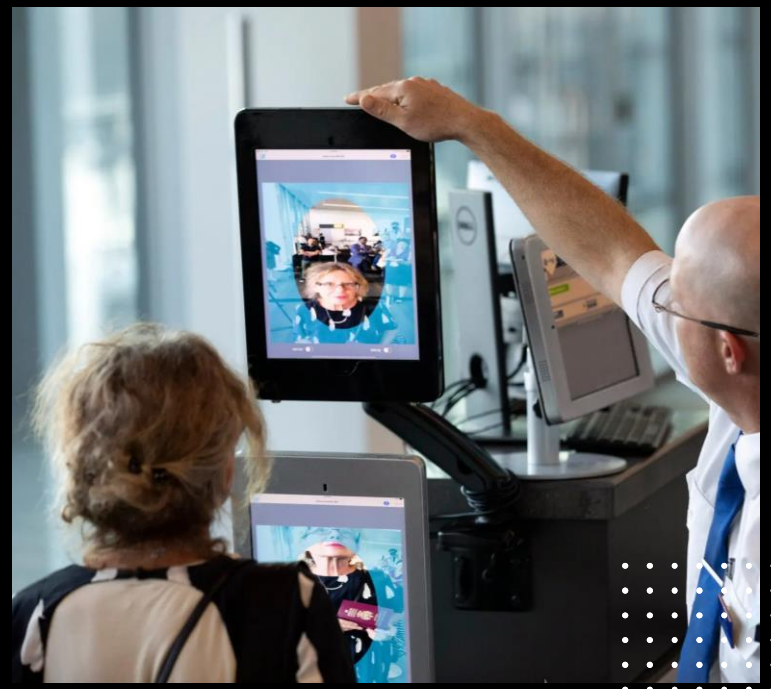


Image link

TECHNICAL FEASIBILITY

- **Capabilities:**
  - **Accuracy:** Improved accuracy using deep learning and neural networks.
  - **Speed:** Fast real-time data processing for airport checkpoints.
  - **Integration:** Easy integration into existing infrastructure.
- **Real-Life Deployments:**
  - **Global Use:** In airports worldwide.
  - **Operational Efficiency:** Faster boarding and immigration.
  - **Security Enhancement:** Reduces document fraud risk.

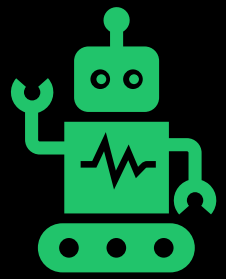
TECHNICAL FEASBILITY

Limitations:

Privacy Concerns: Collecting biometric data raises privacy issues.

Accuracy Disparities: Less accurate for some demographics.

Data Security: Protecting biometric data is a challenge.



Scalability and Maintenance:

Scalability: Global deployment needs substantial resources.

Maintenance and Updates: Continuous updates are crucial for security.

Ethical and Legal consequences

Image link

Privacy Concerns:

- *Ethical*: Facial recognition involves the collection and analysis of individuals' biometric data, which can be seen as an invasion of privacy. Passengers may feel uncomfortable knowing that their faces are continuously scanned and stored.
- *Legal*: Many countries have privacy laws and regulations that govern the collection and use of biometric data. The unauthorized or mishandled use of facial recognition data can lead to legal violations.

Data Security and Cybersecurity:

- *Ethical*: The security of the biometric data collected is of utmost importance. Any data breaches or unauthorized access to this sensitive information can result in identity theft or other harmful consequences.
- *Legal*: Data security breaches can lead to legal actions, fines, and penalties under data protection laws, such as GDPR in the European Union or the CCPA in California.

Cross-Border Data Sharing:

- *Ethical*: International airports often share passenger data, including biometric information, across borders. The ethical implications involve ensuring that data is handled responsibly and not misused.
- *Legal*: Legal frameworks, such as international data protection agreements, govern the transfer of personal data across borders and require adherence to specific rules and standards.

Sources and references for real-life usage of the AI chosen

Report: "Biometrics in Aviation" (2019) by the International Air Transport Association (IATA).

Annotation: Published by IATA, this report examines the global adoption of biometric technologies, including facial recognition, in the aviation industry. It discusses the operational and passenger experience improvements achieved through these technologies.

Article: "Facial Recognition at Airports: Privacy and Security Concerns" (2021) by Sarah Downey.

Annotation: This article delves into the privacy and security issues associated with facial recognition technology in airport settings. It discusses potential risks, such as data breaches and unauthorized surveillance, and advocates for responsible implementation.

Article: "Facial Recognition Technology: The Need for Regulation and Oversight" (2019) by Alvaro M. Bedoya.

Annotation: This article discusses the urgent need for regulation and oversight of facial recognition technology, highlighting its use in airport security and border control. It provides insights into the potential risks to privacy and civil liberties and calls for transparency and accountability in its deployment.

Scholarly Source

For a scholarly perspective on the technical feasibility of facial recognition in airport security, consider the following source:

Title: "Facial Recognition for Airport Security: A Survey and Analysis of Recent Advances"

Authors: Muhammad Usama, et al.

Published in: IEEE Access, 2021.

Summary: This survey paper analyzes recent facial recognition technology for airport security, covering technical challenges and solutions, deep learning integration, real-world implementations, and their effectiveness in enhancing security and efficiency.

Sources and image links

- First slide images links:
  - https://images.idgesg.net/images/article/2017/11/facial_recognition_system_identification_digital_id_security_scanning_thinkstock_858236252_3x3-100740902-large.jpg?auto=webp&quality=85,70
  - https://imageware.io/wp-content/uploads/2021/07/biometrics-concept-facial-recognition-system-face-recognition-iris-recognition-scaled.jpg

Grammarly for English grammar correction: grammarly.com

https://www.nytimes.com/2022/02/26/travel/facial-recognition-airports-customs.html

THANK YOU FOR LISTENING!