Ethical A.I. in Aerospace

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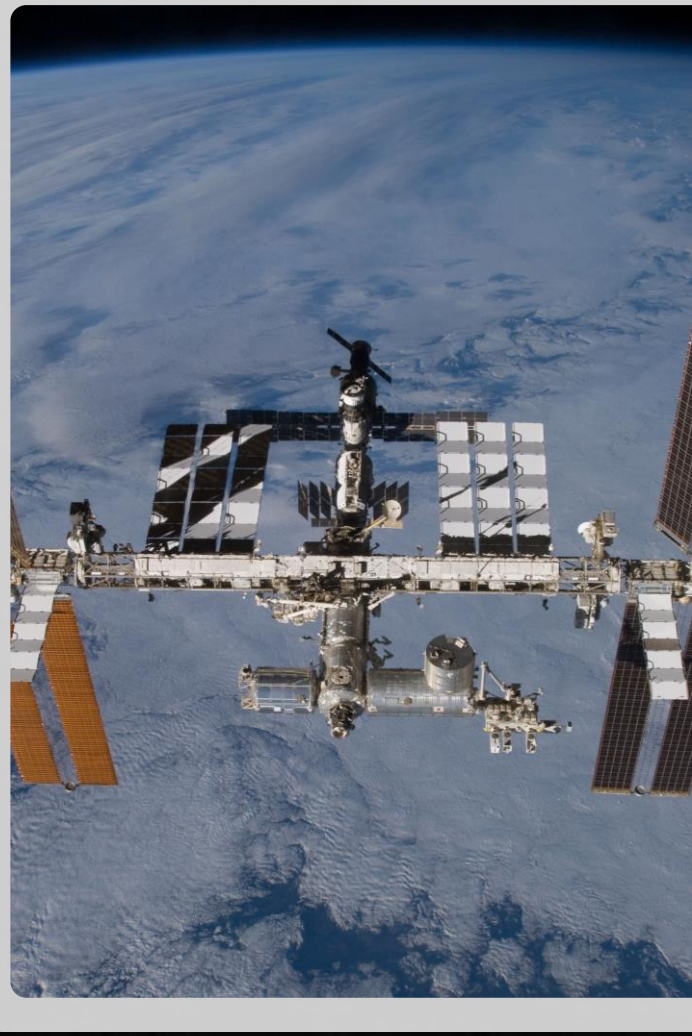
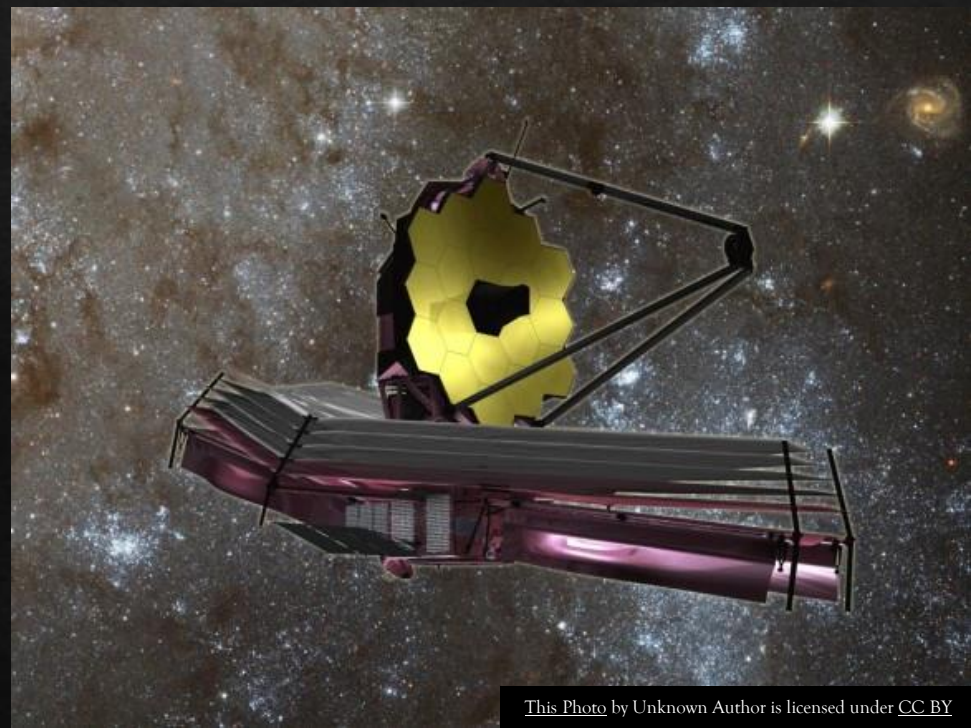


Space Exploration and the Need for AI Ethics

- The rise of private companies
  - SpaceX, Northrop Grumman, Lockheed Martin, Boeing….
- Success within national agencies
  - NASA, ESA, JAXA, Roscosmos
- Aerospace Industry is research and military driven.

The Role of AI in Aerospace

- Reduces latency and eliminates the need for human intervention
- Allows for complex systems such as autopilot, fully autonomous planes, drones, etc.
- Processes image information in surveillance applications (satellites)
- Robotics applications (IBM CIMON)

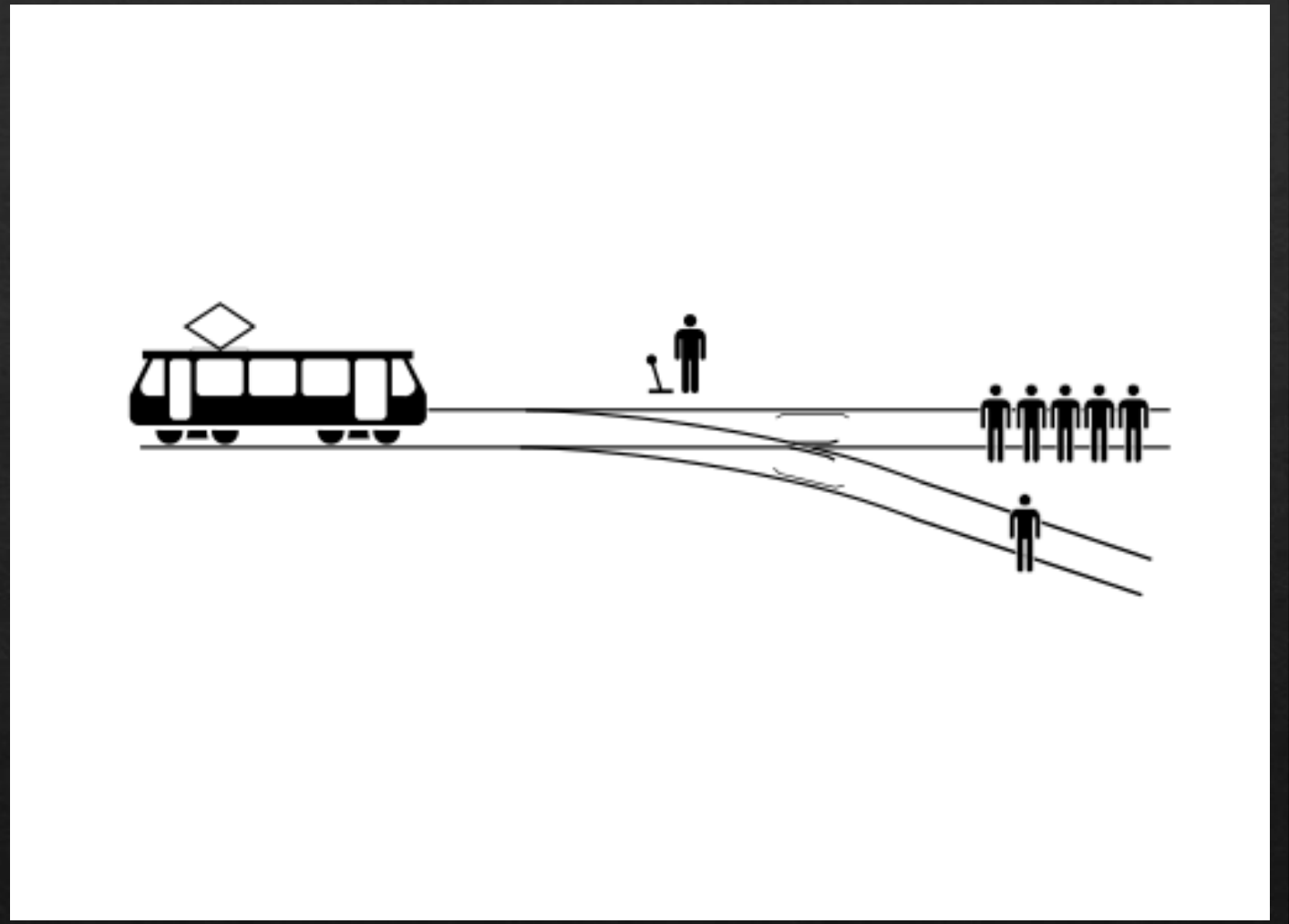


Limitations of AI

- Machine learning-based systems are subject to bias
- Autopilot and even assisted piloting systems can fail (Boeing 737 MAX)
- Information regarding many AI systems in this application is restricted due to confidentiality
- Questionable military ethics and applications

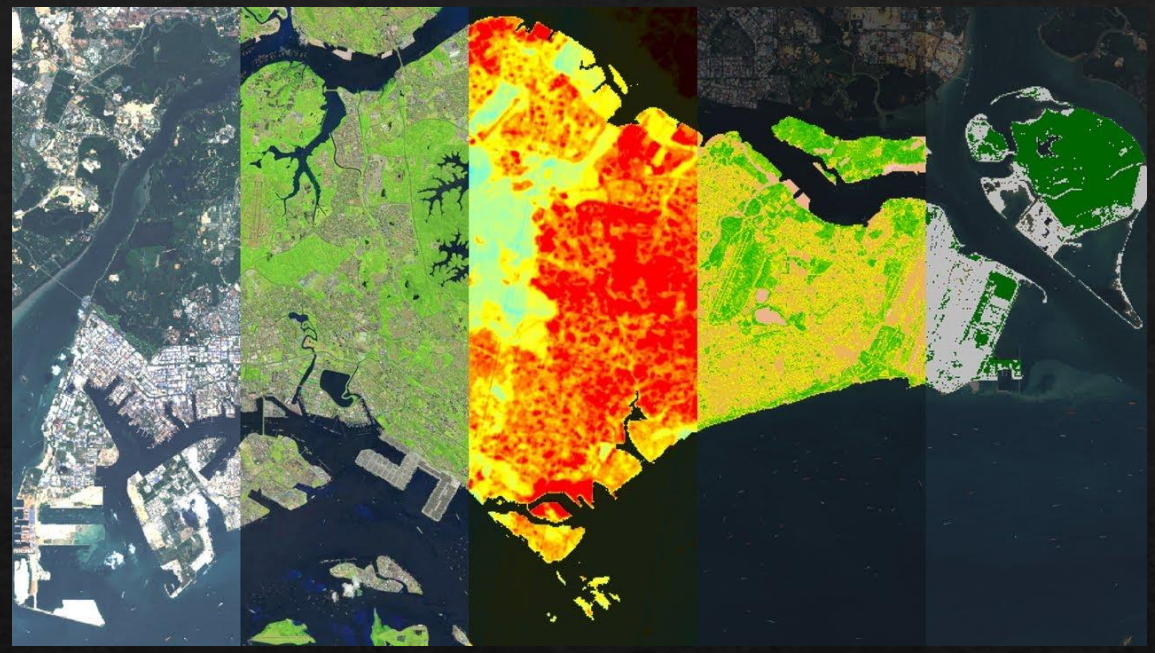
AI and Ethical Dilemmas in Autonomous Aircraft and Spacecraft

- Consequentialism
- Deontology
- Virtue Ethics



AI and the Potential for Harmful Use in Aerospace: Considerations and Limitations

- Applications in military
  - ICBM Technology
  - Faulty research data
  - Unethical surveillance
    - Satellites, Drones
- Potential for malfunction of robot in a human-AI system interaction



The Integration of AI in Satellite Navigation and Surveillance Systems

- Navigation systems (Starlink, Space Junk Concerns)
- Image processing
- Space exploration

The Advantages of AI in Aerospace and Machine Learning Models

- Independent systems
  - Faster satellite processing
  - Autonomous spacecraft/aircraft
  - Advanced weapons technology
  - More interactive robots in space
  - Advanced rovers

Balancing AI Innovation with Ethical Responsibility in Aerospace