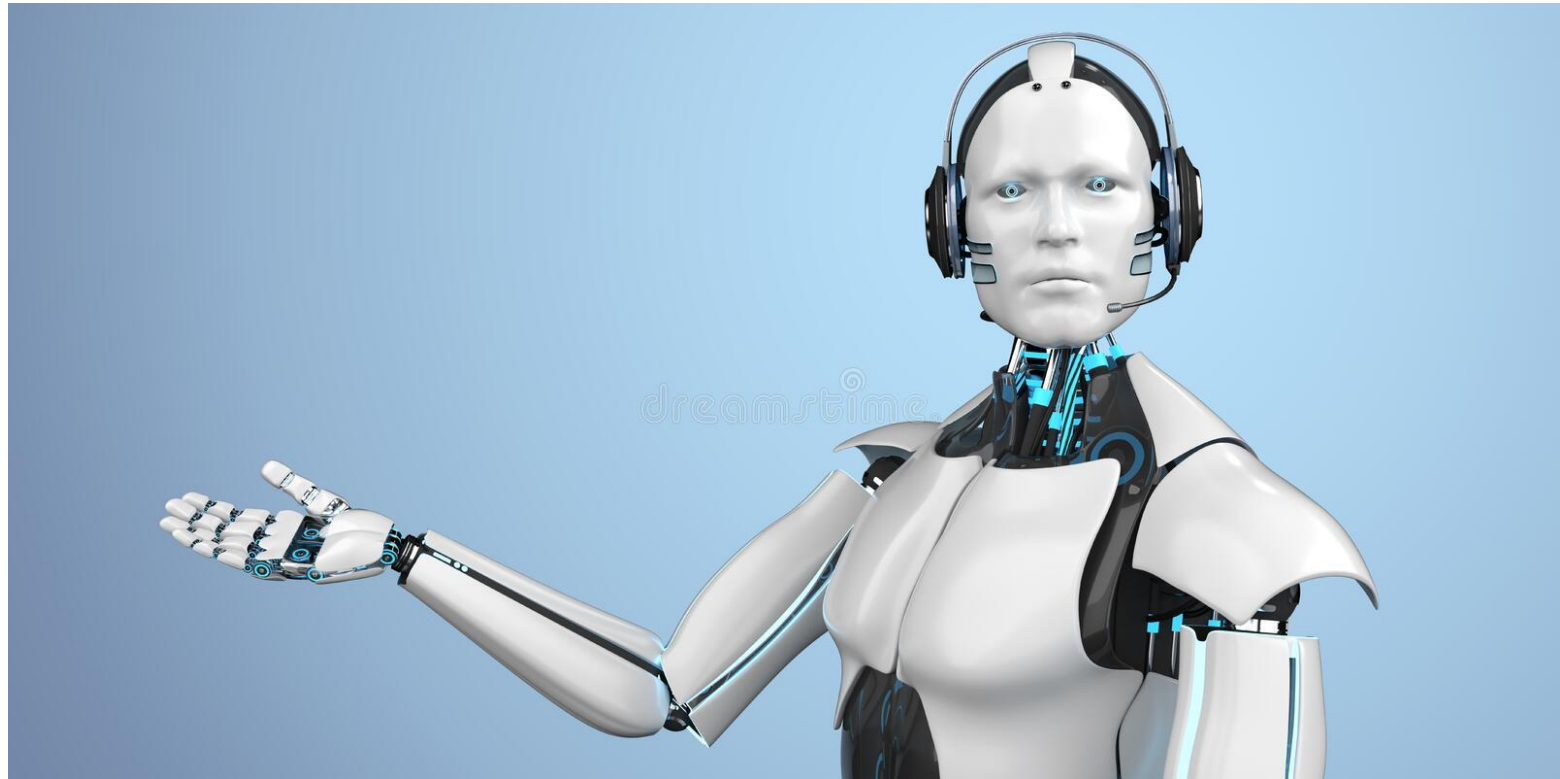# AWS and AI: Implementations for Defence Industry

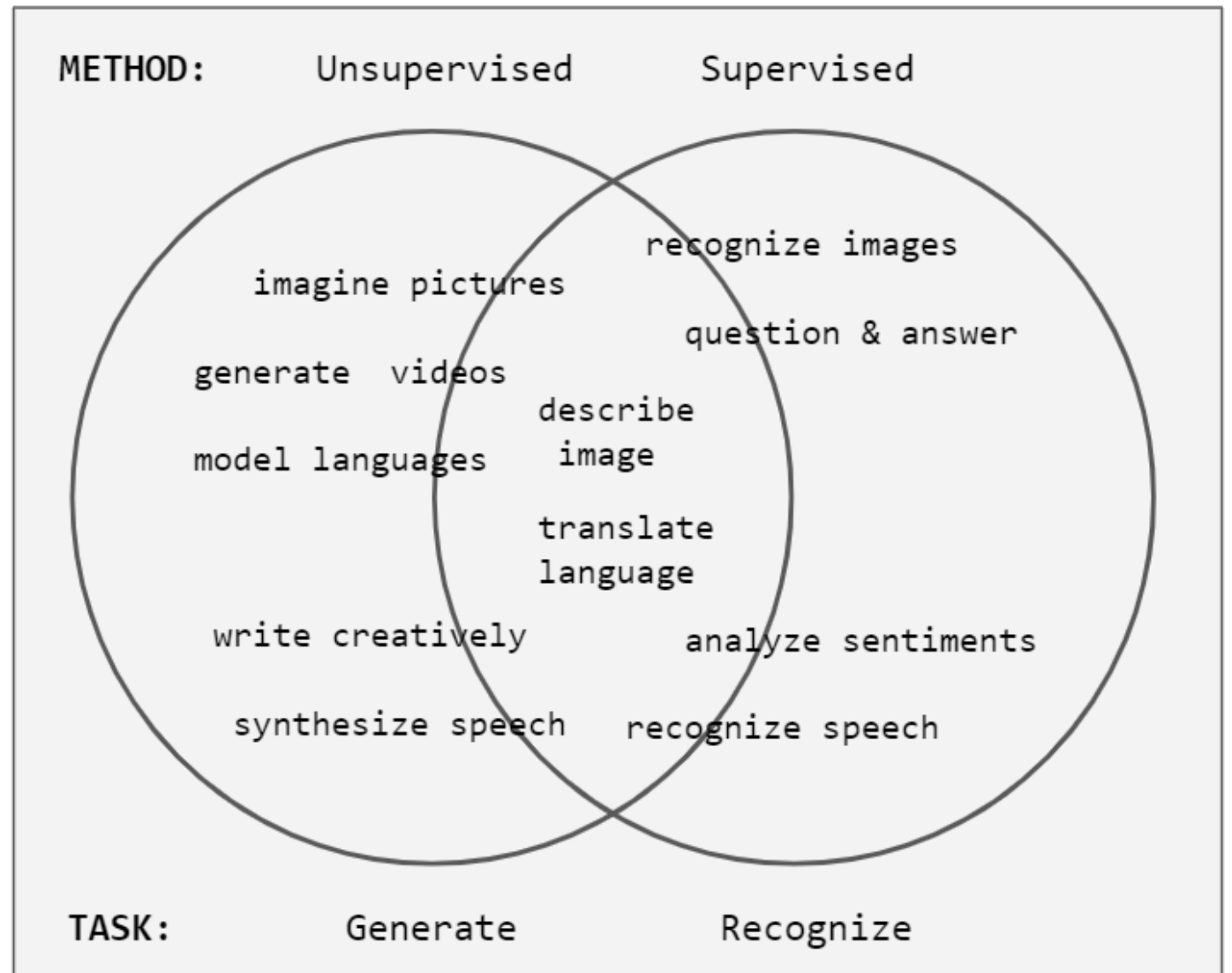*Prof Maurizio Martellini*

Dr Stanislav Abaimov

This presentation

- Myths
- Technical applications of ML in AWS
- Challenges
- Conclusions

Machine Learning Applications

- The terms "Artificial Intelligence" and "Machine Learning" are often, **wrongly**, used interchangeably

- The study of ML focuses on developing **algorithms** that **learn from data**
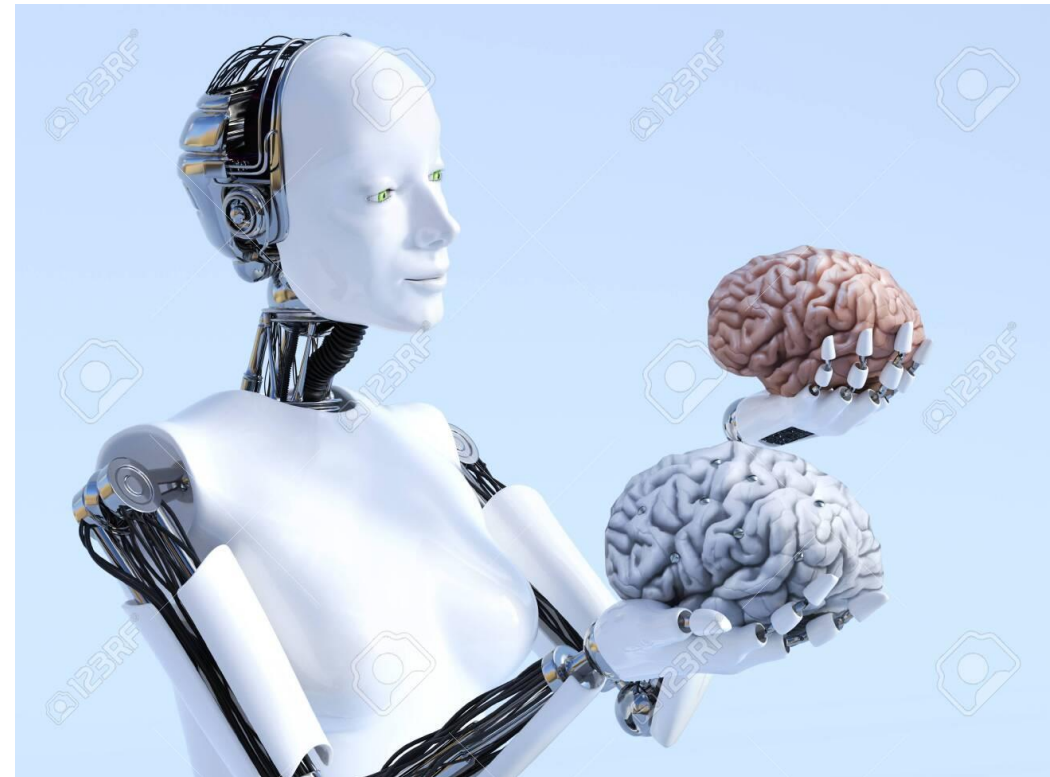
Myths about "AI"

- Self-aware AI:
  - Machine Learning is not an intelligence, it is a method of data correlation

- Out-of-Control AI:
  - Software makes mistakes based on poor datasets and models

- Evolving AI:
  - So far, to the extent of our knowledge, no software has been developed, capable of improving itself or create more intelligent copies of itself

THE OVERTHROW OF TALVS

Machine Learning in AWS

- **Machine Learning**:
  - Data mining (i.e., Regression and Clustering):
    - Data correlation
    - Data enhancement
    - Path-finding a.k.a. Route planning
  - Object recognition (i.e., Classification):
    - Target identification
    - Target tracking
    - Voice recognition
- **Not Machine Learning**:
  - Everything else

Machine Learning for Defence

- Reconnaissance:
  - Data collection
  - Data enhancement
  - Data correlation from multiple domains of warfare
  - Event prediction
  - Target identification
- Defence route planning:
  - Border patrol
  - Evasive movement of troops
- Cyber defence

Machine Learning for Offence

- Reconnaissance:
  - Real-time recon in the field and in media
- Offence route planning:
  - Minimal detection
  - Maximum impact
  - Minimal units
  - Optimal composition for a mission
  - Swarm coordination
- Cyber offence
- Disinformation and Fake news generation

Challenges for ML

- Source data quality

- Real life deployment issues

- Computational power required to run the models

- Evaluation/Validation/Verification

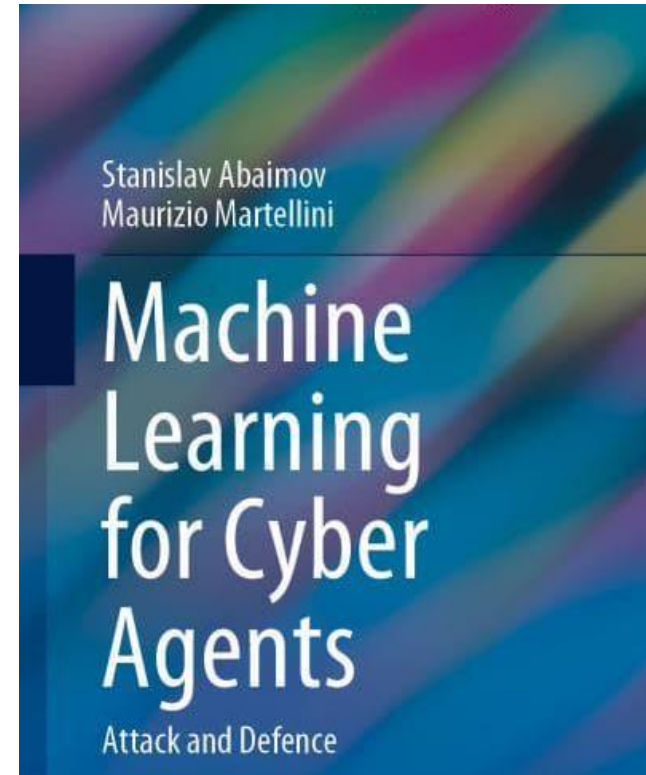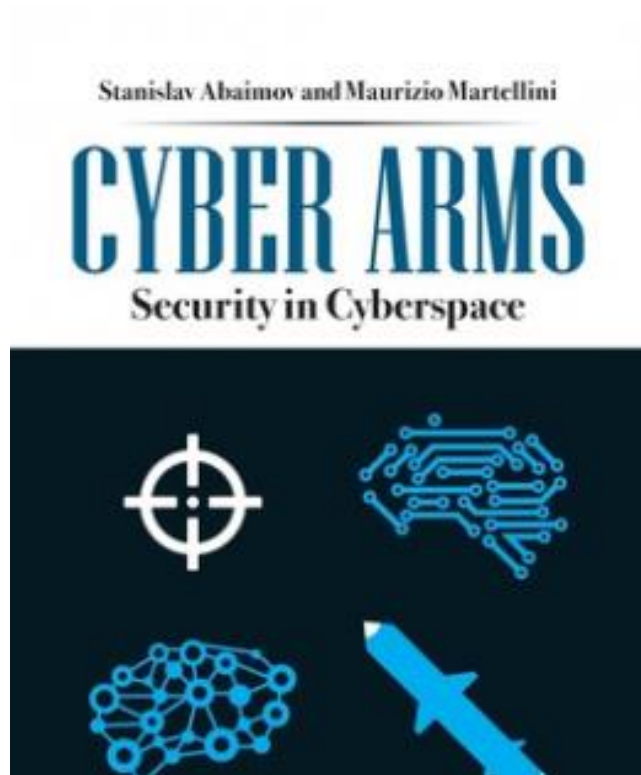- Information deficit about events and technology used

Conclusion

- Machine Learning is:
  - Incomplete
  - Misunderstood
  - Really hard to manage
- Cross fertilization in ML arena between defence industry and academic community could be promoted in a public debate/forum

More on ML for Cyber

Thank you