

# Regulation and the Liability Problem for Increasingly Autonomous Systems

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# Overview

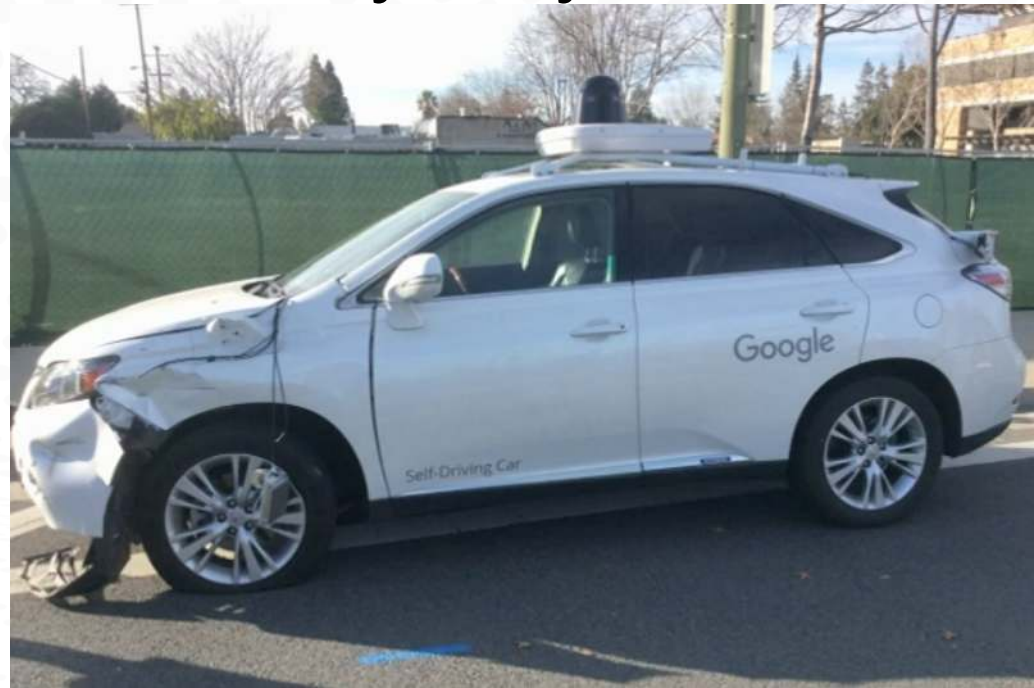
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- Regulating Robots & AI
- Promote Safety & Innovation
  - Markets
  - Public Opinion
- Expectations & Predictability
- Managing Failures

# The Liability Problem

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- As increasingly autonomous systems act in the world, in increasingly complex and unpredictable ways, how do we manage the liability for the harms they may cause?
- Separation of:
  - Causal Agency
  - Legal Agency
  - Moral Agency



# Liability & Accountability

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- Compensation for Harms
- Punishment
  - Retributive Justice
  - Feedback Signal (Reform/Learning)
  - Deterrence (Impact on Future Decisions)
- Intention & Human-Centric
- Accountability & Transparency

# Legal Approaches

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- Agents & Diminished Agents
  - Children, Slaves, Animals
  - Agency Law
  - Employees
- Product Liability & Negligence (Corporations)
  - Joint & Several Liability
  - Strict Liability
  - Insurance or State/Society

# Responsibility

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- *Retroactive*
  - Someone to Blame & Punish
  - Target of Reform (Feedback)
  - Source of Retribution
  
- *Proactive*
  - Active Taking of Responsibility
  - Making Moral & Legal Judgements

# Human Responsibility

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- Meaningful Human Control
- Kill Switch
  - Recognizing Misaligned Values
- Policy Lever
  - Laws Act on Humans/Institutions
- Inappropriate Delegation
  - Lethal Decisions
  - Deprivation of Rights (Due Process)



# Accountability Gap in AWS

- Who is responsible for the deaths?
  - Programmers
  - Commanders
  - Operators
  - The AWS
  - The State
  - Nobody? (de facto)
- Minimal Liability in War
- War Crimes Require Intent





# Policing & Lethal Robots

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- Higher Standards for Use of Force
  - “In order to prevent an immanent threat of death or grave bodily harm.”
- Threat ID Requires:
  - Physical Modeling Capability
  - Psychological Model of Intent
- Could Disrupt Threat w/o Lethal Force
- Most Cases are Self-Defense of Officer
- **Answer: No Autonomous Use of Force**



# Future Work

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- Regulatory Mechanisms
  - On Humans/Manufacturers
    - Law
    - Ethics Boards
    - Training Engineers
    - Ethics in Design Process (IEEE P7000 Standard)
  - Internal to Autonomous Systems
    - Technical Safety Mechanisms
    - AI/Machine Ethics
  - Learned vs. Imposed by Design

# Papers

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- Asaro, P. (2016). “[The Liability Problem for Autonomous Artificial Agents,](#)” [AAAI Symposium on Ethical and Moral Considerations in Non-Human Agents,](#) Stanford University, Stanford, CA, March 21-23, 2016.
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- Asaro, P. (2015) “[Roberto Cordeschi on Cybernetics and Autonomous Weapons: Reflections and Responses,](#)” [Paradigmi: Rivista di critica filosofica,](#) Anno XXXIII, no. 3, Settembre-Dicembre, 2015, pp. 83-107.
- Asaro, P. (2012). “[On Banning Autonomous Lethal Systems: Human Rights, Automation and the Dehumanizing of Lethal Decision-making,](#)” Special Issue on New Technologies and Warfare, [International Review of the Red Cross,](#) **94** (886), Summer 2012, pp. 687-709.
- Asaro, P. (2011). “

# Thank You!

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