

Ingegneria ed Etica @ Delft University of Technology

Filippo Santoni de Sio

Sect. Ethics/Philosophy of Technology, TU Delft

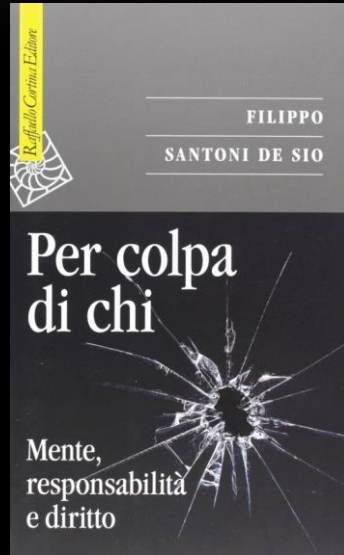


A wide-angle, high-angle photograph of a TU Delft campus. A central paved walkway leads towards a tall, modern glass building in the background. The area is filled with green grass, young trees, and people walking. The sky is clear and blue. A large white URL is overlaid on the center of the image.

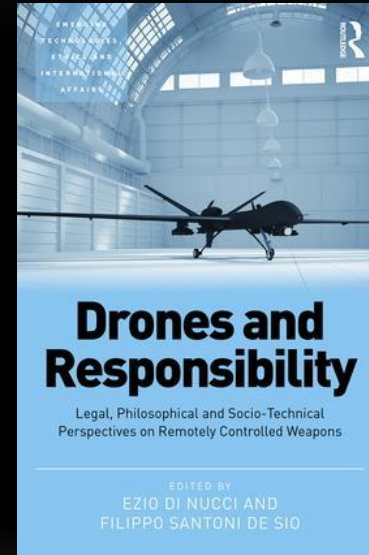
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Philosophy of Law (2013)



Applied Ethics of Technology (2016)



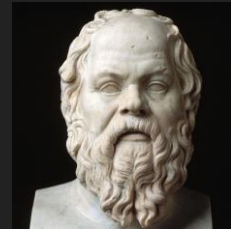
...e Filosofia del Calcio (2018)

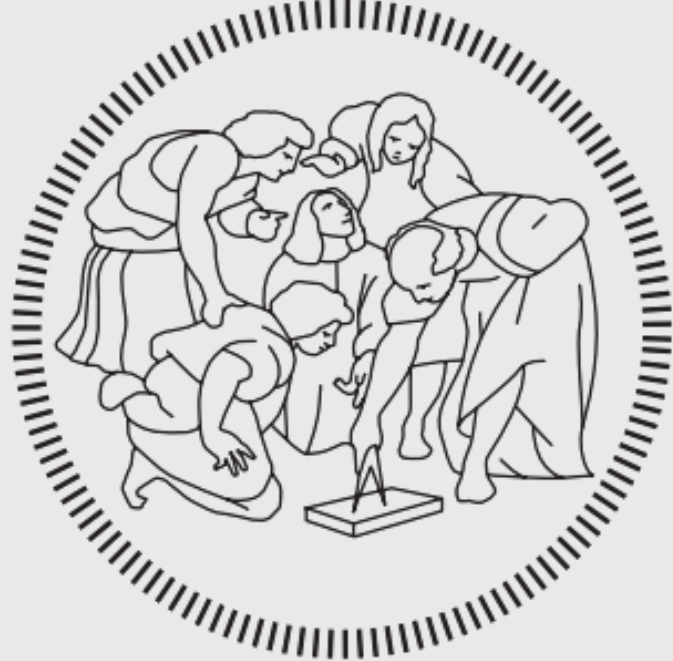






I KNOW ONE THING, THAT I
KNOW NOTHING





POLITECNICO

MILANO 1863





ETHICS AND ENGINEERING

THE ETHICAL DILEMMA OF SELF-DRIVING CARS



<https://www.youtube.com/watch?v=ixloDYVfKA0>



Killing by Autonomous Vehicles and the Legal Doctrine of Necessity

Authors

[Authors and affiliations](#)

Filippo Santoni de Sio 

[Open Access](#) | Article

First Online: 22 February 2017

6

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Abstract

How should autonomous vehicles (aka self-driving cars) be programmed to behave in the event of an unavoidable accident in which the only choice open is one between causing different damages or losses to different objects or persons? This paper addresses this ethical question

IT IS ALWAYS TOO EARLY TO
ASSESS A TECHNOLOGY,
UNTIL SUDDENLY IT IS TOO
LATE.

Martin Buxton
(1987)

VALUE-SENSITIVE DESIGN

- ❓ A **design perspective** in ethics of technology
- ❓ **Interdisciplinarity**
- ❓ Systematic analysis of relevant **Stakeholders** and **Values**
- ❓ Technical **and** Institutional Design
- ❓ **”Comprehensive Engineering”**
- ❓ **”Socio-technical** systems

*WITH GREAT POWER
COMES GREAT RESPONSIBILITY...*



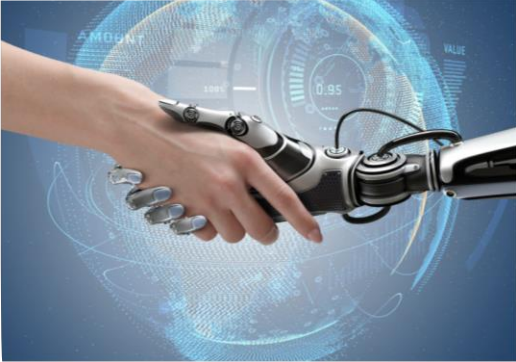
Faculty of Technology, Policy and Management (TPM), TU Delft



Engineering Systems
and Services



Multi-Actor Systems



Values, Technology
and Innovation



Rijkswaterstaat
Ministerie van Verkeer en Waterstaat

- White paper *Ethics and Self-Driving Cars* for the Ministry of Infrastructure and Environment



joopveen
@joopveen

Following

De schrijver van het stuk dat het meest werd gedownload op [#KARNL](#) [#STAD](#)

Translate Tweet



1:44 PM - 7 Mar 2017

Meaningful Human Control over Automated Driving Systems

Bart van Arem, Simeon Calvert
Filippo Santoni de Sio, Giulio Mecacci
Marjan Hagenzieker, Daniël Heikoop

Prof. Bart van Arem

Prof. Marjan Hagenzieker

Dr Filippo Santoni de Sio



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nationale
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Ministerie van Infrastructuur en Milieu



Rijkswaterstaat
Ministerie van Infrastructuur en Milieu



WETENSCHAPPELIJK
ONDERZOEK VERKEERSVEILIGHEID



Netherlands Organisation
for Scientific Research

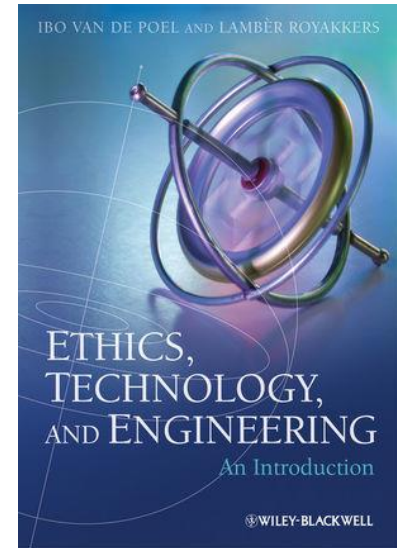
Responsible
Innovation

Ethics teaching at TU Delft

Since ca 20 years The Ethics and Philosophy of Technology Section (TPM) provides ethics teaching at TU Delft.

Tailormade per program:

- Lectures
- tutorials
- Exam and essay
- Material developed with experts from engineering education programs



Ethics education 2.0

- *Purpose:* TU Delft would like to educate engineers with a broad, 'comprehensive' perspective. For this reason, TU Delft would like to see to it that all students are offered training in ethics.
- *Current situation:* In some BS- and MSc-programs, but not in all.
- *On request of the board of TU Delft:* Proposal for a solution that is efficient but that is also academically challenging for staff and students.

Current situation

Faculty	Bachelor	Master
TBM	1 course	3 courses (EPA, MOT, SEPAM)
LR		1 course (for all masters)
TNW		1 course (for almost all masters)
3ME	2 courses (WB, MT)	
CITG	Teaching line (started 2016/17)	1 course (master CT)
EWI	2 courses (EE, TI)	1 course (compulsory for master Applied Mathematics)
BK	Teaching line (in development)	Some small contributions
IO	Teaching line (in development)	Contribution to a minor

New setup

- **BSc:** Basic competencies in ethics (and philosophy of science, scientific integrity and diversity) preferably through teaching lines, possibly by stand-alone course. Embedding ethics into standard curriculum, involving exemplary cases, connected to fitting, existing courses, cooperation with teachers of respective faculties, use online teaching material.
- 'Teaching the co-teachers' will be provided by the Ethics and Philosophy of Technology Section.
- *[Suggested to include this in BKO / UTQ.]*
- **MSc:** Specialized master course for students of all Faculties, not necessarily organized by program, but instead create a palette of more thematic courses.
- Also include philosophy of science / methodology / research ethics elements in courses.

Thematic ethics courses

- Geoengineering and Space ethics
- Climate ethics
- Water ethics
- Energy ethics
- Risk and safety ethics
- Computer ethics
- Robotics/AI and ethics
- Biotechnology and ethics
- Health technology and ethics
- (Urban) design ethics
- Ethics of transportation technology and logistics
- Environmental ethics
- Responsible Innovation and Value Sensitive Design
- Engineering Ethics (general)
- Science ethics
- Etc.

Design requirements

- each master student at TU must have taken at least one such course during the master.
- Programs can then choose whether students should take a specific course (possibly with partially tailor-made content), or they can let students choose themselves from all the courses (or from a subset of courses).
- Requires some standardization (5 ECTS per course incl. essay, 3 ECTS without essay)
- provides programs and students with more flexibility
- gives teachers and students more room to study a topic in depth.
- can stimulate students to work on a theme in an interdisciplinary setting

Contact person per Faculty:

- Overall coordination: Sabine (and Neelke)
- Teaching portfolio: Neelke -> Janna

- IO teaching line: Janna
- L&R teaching line: Udo
- EWI teaching line: Filippo
- Citg: Neelke
- 3ME MSc: Sabine
- TNW: Sabine / Aimee
- TBM: Sabine
- BK: Ibo (teaching line: Mark / Ibo)

INGEGNERIA ED ETICA

- ? Ricerca e formazione
- ? Solido contesto istituzionale
- ? Percorsi strutturati
- ? Corsi su misura
- ? Integrazione nei curricula
- ? Interesse governi, media, pubblico
- ? Ingegneria è etica



<https://www.tudelft.nl/ethics/>