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KOOPERATIVE FAHRER-
FAHRZEUG-INTERAKTION

Privacy and Ethics in Highly Automated Driving

Susanne Kuhnert, MA & Dr. Julia Maria Mönig
Stuttgart / May 25th 2019

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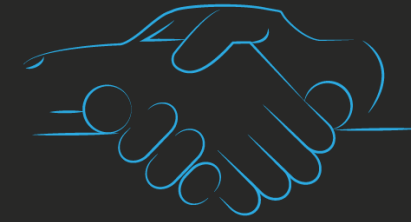


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Overview



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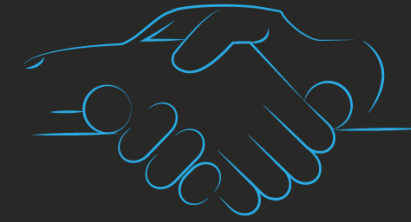
- Research project KoFFI:
Cooperative driver-vehicle interaction
- Ethics and privacy by design and ELSI
- Guidelines
- Discussion

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Research partners in KoFFI (SAE level 3-4)



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Manuelle Fahrt, KoFFI
überschreibt Fahrer



Situationsoptimierte
Übergabesituationen



Manöverfreigabestrategien
an HAD Systemgrenzen



Sprachinteraktion, Priorisierung
sprachlich geäußerter Absichten

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Kooperation bei menschlichen
Grenzen (z.B. spontanes Eingreifen)



ELSI

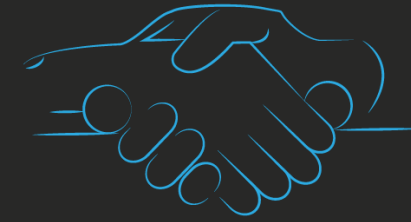


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ELSI in KoFFI



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- Ethical awareness-rising
- Interviews with test drivers
- Narrative interviews
- Discussing specific ethical questions with partners

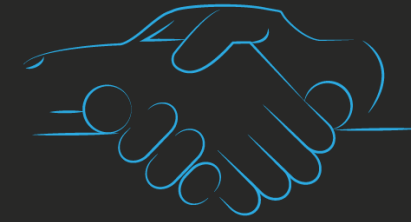


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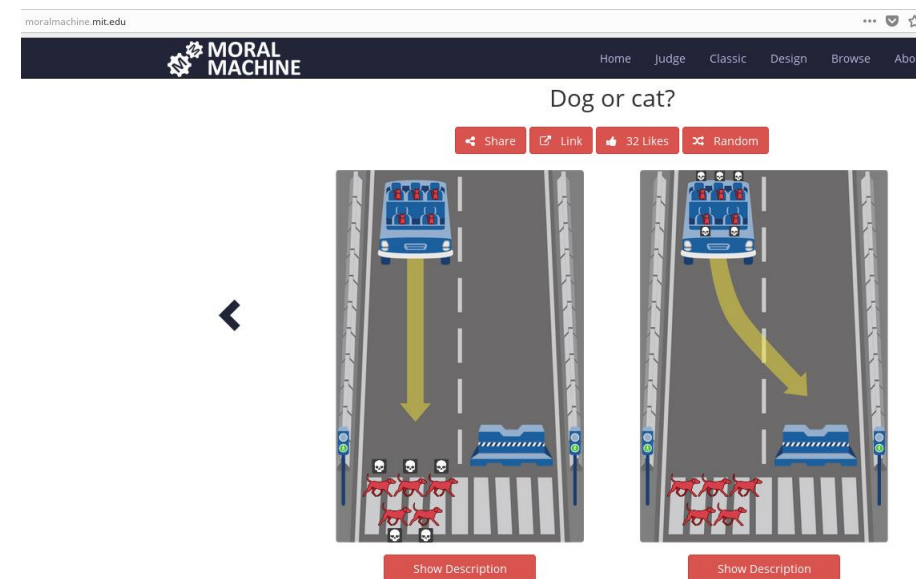
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Implementing ethics



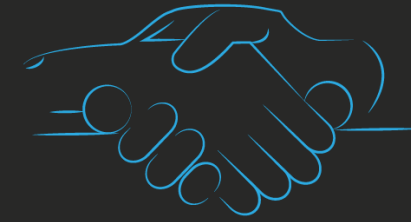
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- Programming ethical approaches e.g. utilitarian ethics (Gerdes/Thornton 2015)
- Moral Machines
- Game about moral dilemmas: moralmachine.mit.edu
- Cultural differences (Awad et al. 2018)



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Ethics by design



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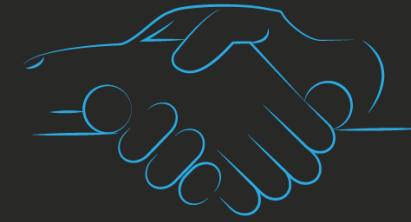
- Universalism v. cultural differences?
- Questions to be considered: which values? how to define them?
Whom to ask?
- Data protection / privacy by design and by default (GDPR Art. 25)

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Values in design



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- „A value refers to what a person or group of people consider important in life“ (Friedman/Borning 2006)
- 3 functions:
 - Guide our actions
 - Construct reality
 - Can be reasons why or why not to act

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Guidelines?



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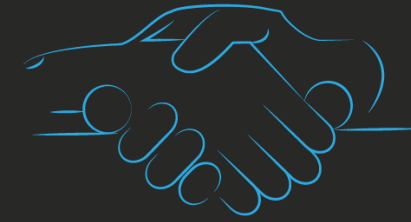
- Developing them together with all stakeholders
- During the process, from the beginning on
- If necessary: change them even if the product is ready
- If necessary: change them e.g. after being on the market, because values might change
- Ethical Evaluation and Monitoring
 - Avoid paternalism
 - As selling point
 - No „obstacles“ for Research and development

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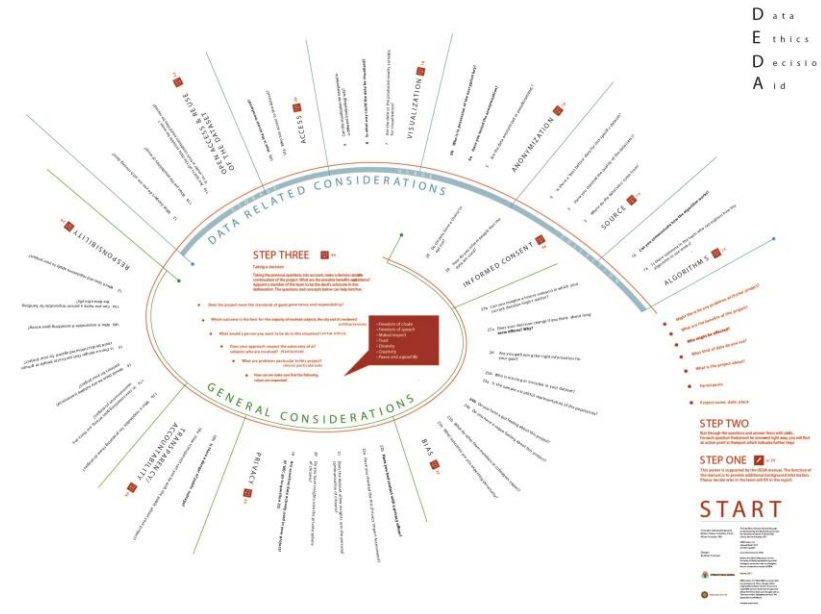
Existing Approaches



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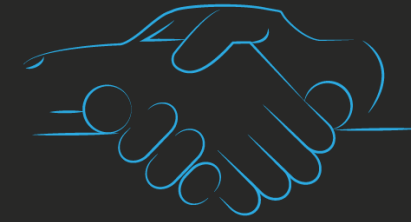
- Guidelines „Ethik-Regeln“ of the „Ethik-Kommission automatisiertes und vernetztes Fahren“, BMVI (2017)
- High Level Expert Group on AI: Ethics Guidelines for Trustworthy AI (2019)
- Data Ethics Decision Aid, Utrecht Data School

- Freedom of choice
- Freedom of speech
- Mutual respect
- Trust
- Diversity
- Creativity
- Peace and a good life



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Ethics and Security (EGE Statement)



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First, questions about safety, security, the prevention of harm and the mitigation of risks. How can we make a world with interconnected AI and ‘autonomous’ devices safe and secure and how can we gauge the risks? [...]

(g) Security, safety, bodily and mental integrity

Safety and security of ‘autonomous’ systems materialises in three forms:

- (1) external safety for their environment and users,
- (2) reliability and internal robustness, e.g. against hacking, and
- (3) emotional safety with respect to human-machine interaction

- European Group on Ethics in Science and Technology (EGE) Statement on Artificial Intelligence, Robotics and ‘Autonomous’ Systems (2018)

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Ethical Principles (Draft, comments welcome!)



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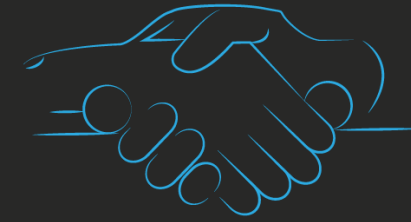
1. Technology is never neutral
2. „Justice as fairness“
3. (Inter-)national laws and human rights
4. Human autonomy / moral autonomy
5. Sincerity and transparency
6. Protecting the Future: nature and human life
7. Human-technology cooperation (not only inter-action)

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1. Technology is never neutral



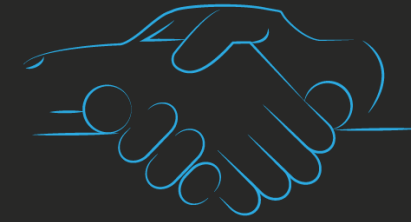
(Designing) Technology is never neutral. Designers, engineers, software developers, coders,... should become aware of what values they consciously and unconsciously express with and through their design and which values they want to promote. Especially in an intercultural context values should be reflected since technology and design are of socio-political relevance.

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2. Fairness / Justice



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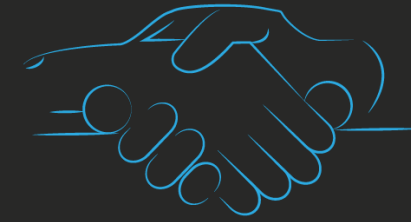
Automated technologies should respect justice and be careful to not promote social discrimination. John Rawls's principle „justice as fairness“ offers a perspective to judge just distribution, by regarding things through the so-called “veil of ignorance”. This way neither one's social status nor capabilities can influence a just order.

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3. Laws and rights



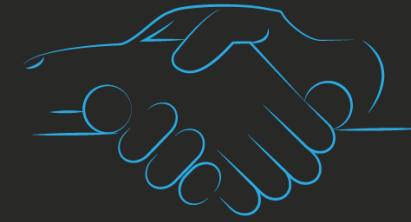
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All developments must deal with the applicable national laws as well as the international human rights. While a law describes direct prohibitions, a right is something that can be claimed by every individual but that does not have to be claimed. Mobility is an individual right and it is related to other individual rights, such as liberty rights and the right to private property. However, a right should not need to be claimed but should be respected by design right from the beginning of the design process. At least from the moment on, in which a design or a product is concerned with or changes laws and rights, it gets a political dimension.



4. Human autonomy



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The autonomy of a human being has especially to be respected in regard to their moral autonomy. Moral decisions should never be forced upon a person through technology and there must always be enough freedom for the individual to make their personal decisions. A manipulative technology is not desirable from an ethical point of view. Technology should never pass a judgment on a human and should never force a person to judge. Moral autonomy is a precondition for the right to a life in freedom.

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5. Sincerity



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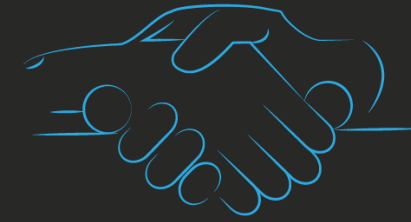
All processes should be accompanied by the value of sincerity.
Without sincerity there is no sense in claiming transparency.

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6. The Future



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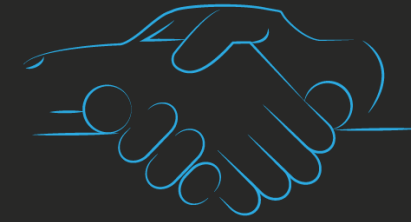
Innovations are aiming at shaping the future. This is why the future always needs to be protected by innovations. Especially nature and human life need to be protected.

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7. Human-Technology-Cooperation



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Cooperation between human beings and technology shall respect the value of solidarity. Especially in regard to the skills humans need in order to be able to handle machines in the future. All human beings in all social positions have to be able to learn these skills to a certain degree.

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References



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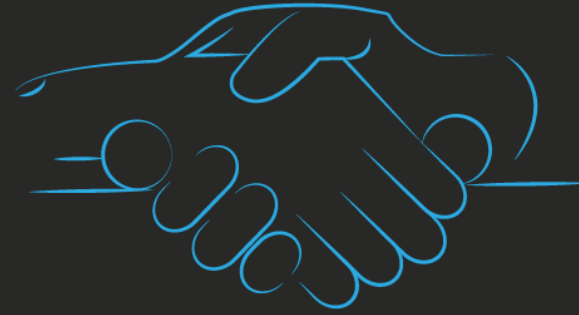
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Thank you!

Susanne Kuhnert, M.A. / Dr. Julia Maria Mönig

Institut für Digitale Ethik

Hochschule der Medien

Nobelstr. 10

Stuttgart

Tel.: +49 (0)711 / 8923 - 2652

kuhnert@hdm-stuttgart.de / moenig@hdm-
stuttgart.de

<http://www.digitale-ethik.de>

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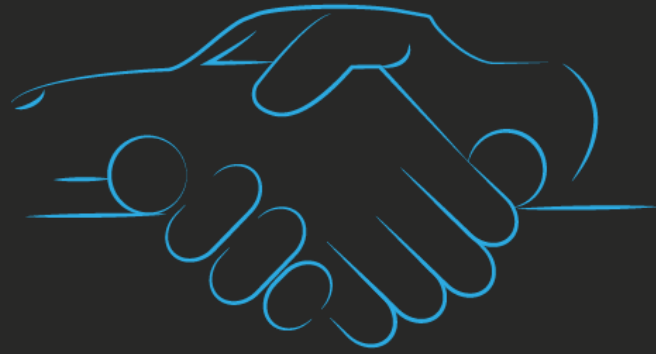
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Backup slides

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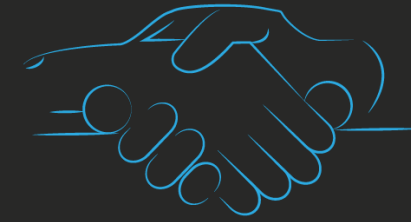


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Special categories of personal data



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- “1. Processing of personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and the processing of genetic data, biometric data for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person's sex life or sexual orientation shall be prohibited.” (GDPR Article 9)
- Unless “data subject” has given “explicit consent” or the processing is necessary for one of the reasons mentioned in Article 2 (a)-(j)
- Specific regulations for the processing of genetic data, biometric data or data concerning health per member state possible

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Straßenverkehrsgesetz (StVG)

§ 1b Rechte und Pflichten des Fahrzeugführers bei Nutzung hoch- oder vollautomatisierter Fahrfunktionen

(1) Der Fahrzeugführer *darf sich* während der Fahrzeugführung mittels hoch- oder vollautomatisierter Fahrfunktionen gemäß § 1a vom Verkehrsgeschehen und der Fahrzeugsteuerung *abwenden*; dabei muss er derart *wahrnehmungsbereit* bleiben, dass er seiner Pflicht nach Absatz 2 jederzeit nachkommen kann.

(2) Der Fahrzeugführer ist verpflichtet, die Fahrzeugsteuerung unverzüglich wieder zu übernehmen,
1. wenn das hoch- oder vollautomatisierte System ihn dazu auffordert oder
2. wenn er erkennt oder auf Grund offensichtlicher Umstände erkennen muss, dass die Voraussetzungen für eine bestimmungsgemäße Verwendung der hoch- oder vollautomatisierten Fahrfunktionen nicht mehr vorliegen. https://www.gesetze-im-internet.de/stvg/__1b.html

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Data protection by design and by default



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GDPR Article 25 Data protection by design and by default

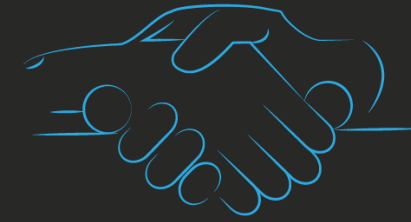
- 1. Taking into account the state of the art, the cost of implementation and the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for rights and freedoms of natural persons posed by the processing, the controller shall, both at the time of the determination of the means for processing and at the time of the processing itself, implement appropriate technical and organisational measures, such as pseudonymisation, which are designed to implement data-protection principles, such as data minimisation, in an effective manner and to integrate the necessary safeguards into the processing in order to meet the requirements of this Regulation and protect the rights of data subjects.
- 2. The controller shall implement appropriate technical and organisational measures for ensuring that, by default, only personal data which are necessary for each specific purpose of the processing are processed. That obligation applies to the amount of personal data collected, the extent of their processing, the period of their storage and their accessibility. In particular, such measures shall ensure that by default personal data are not made accessible without the individual's intervention to an indefinite number of natural persons.
- 3. An approved certification mechanism pursuant to Article 42 may be used as an element to demonstrate compliance with the requirements set out in paragraphs 1 and 2 of this Article.

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(Possible) Values for automated driving



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