Regulating AVs Ethically

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Justification

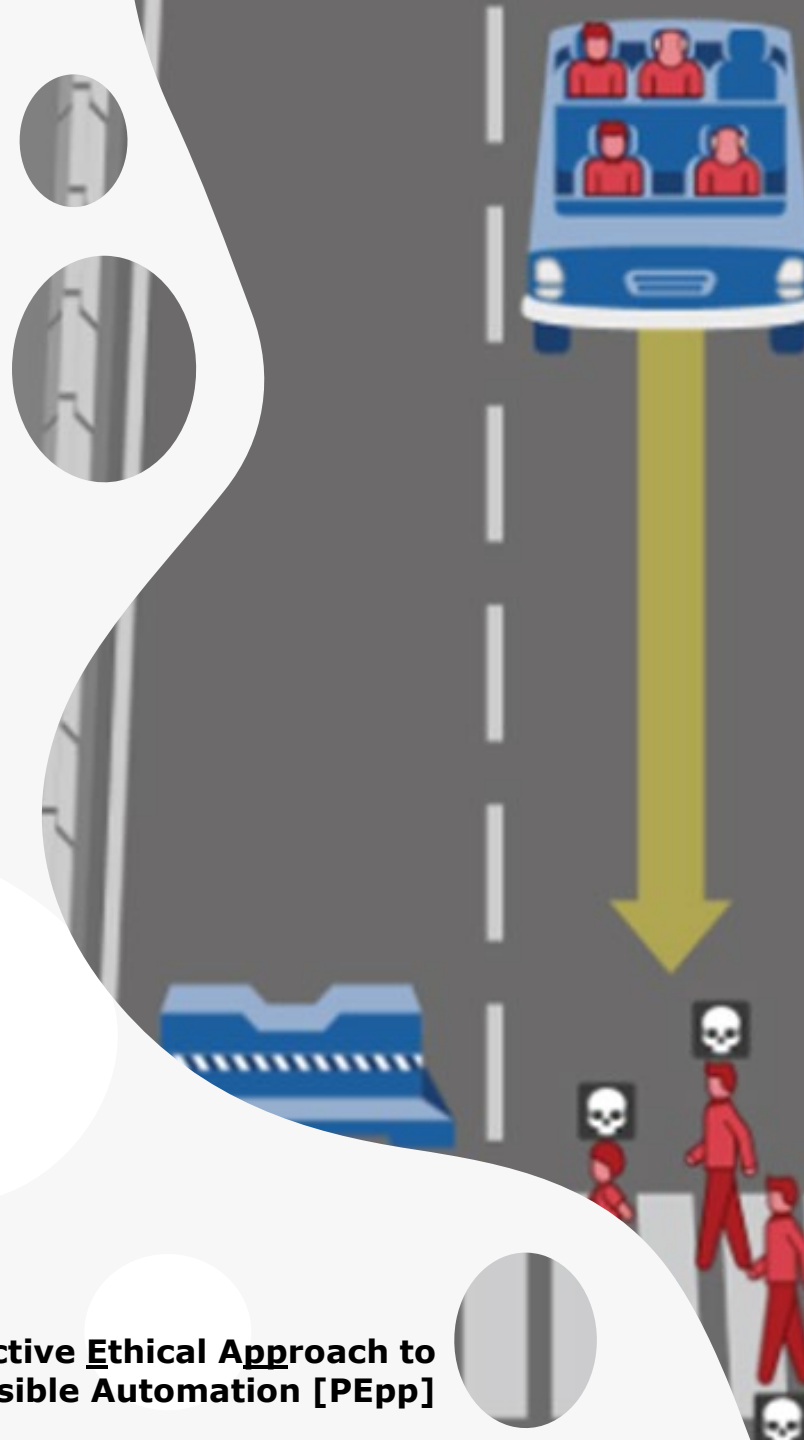
- AVs WILL save lives
- Collisions are inevitable
- Need public adoption
- Public cares about the ethical

Ethics

- Economic
- Social
- Environmental
- Fairness and justice

The PEpp Project*

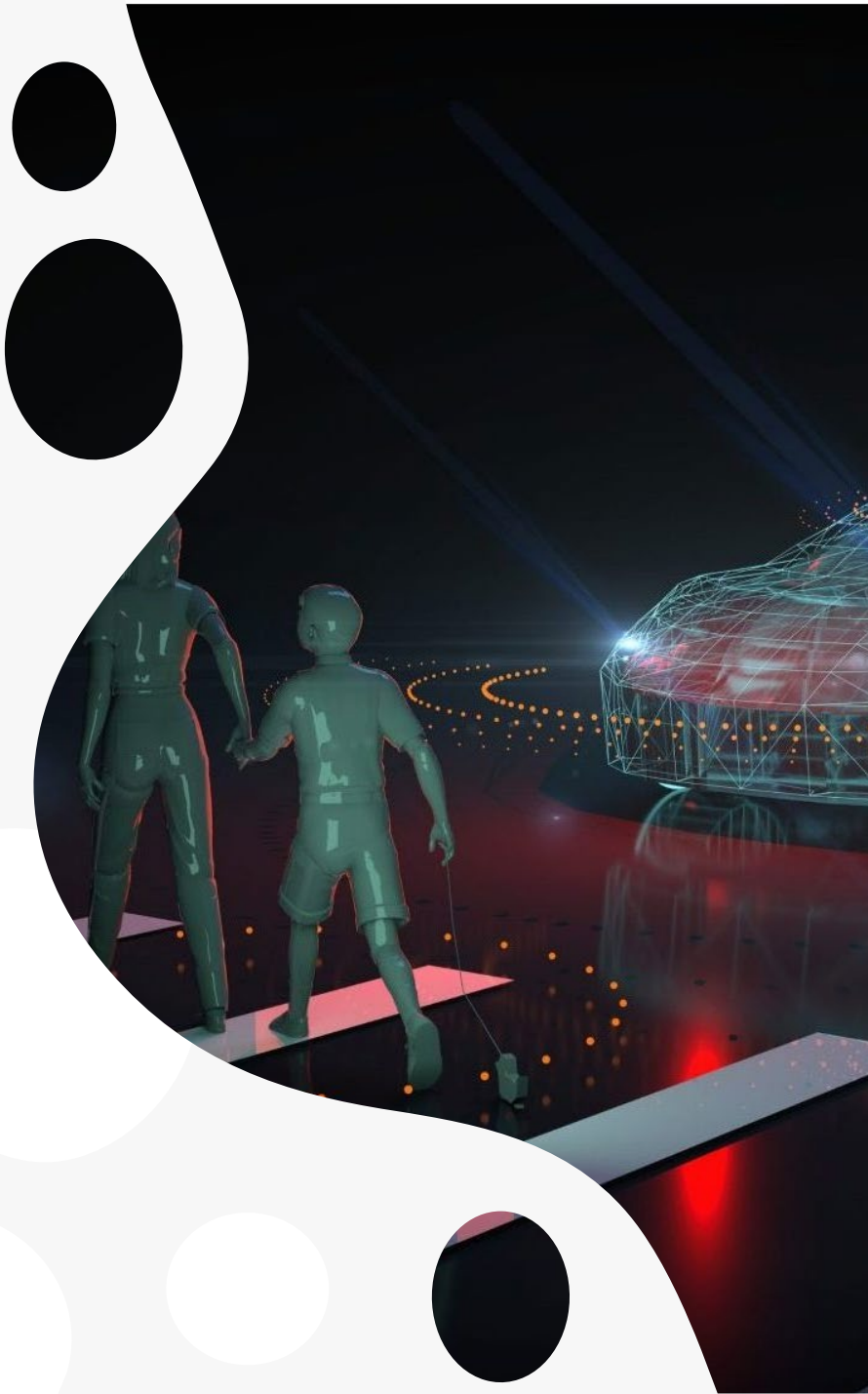
- Aim: Evaluate Expert Opinions on the Implementation of AVs in Switzerland
- Method: Qualitative
- Sample
  - Experts 46 AV experts
  - Swiss and International
  - Academic, Private, Policy, Implementors



*A Proactive Ethical Approach to Responsible Automation [PEpp]

Findings

- Experts feel morally responsible
- Expert's ethical frameworks are poorly developed
- Experts would appreciate regulation
- Regulation should include multiple stakeholders
- Regulations should be clear and simple



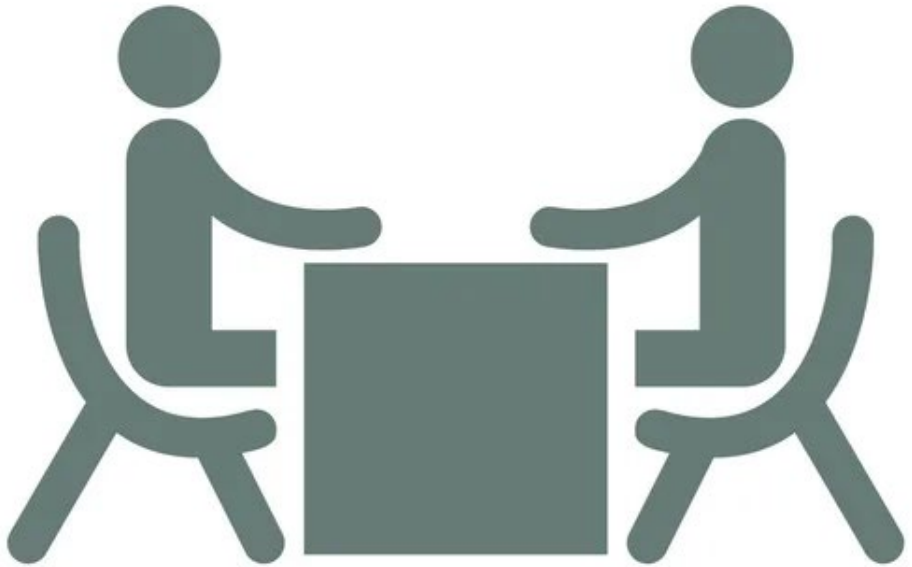
Diverse Opinions

- Characteristics intuitively play a role
  - Age & Number
- AVs make better decisions
- Uniformed decisions are not desirable
- Should mimic human driver decisions
- Preference for drivers (a paradox)
- Preference for VRU

So if it's not clear what is the right thing to do… personally I would refuse to [program AVs].

If they sell you a car which for 90% of the times [saves] the driver… I mean, you don't trust that 10% in which you won't be saved? Right.

Obviously if somebody has basic backgrounds in mathematics and knows that the world has uncertainty, absolutely zero [deaths] is impossible.



I do think that you make a certain kind of decision when you get in a car, right? Which the pedestrian never made that decision.

I mean from a mathematical approach it's saving two lives instead of one. Which is horrible to say but it is kind of true, right?

I think that's a good metric to know who to kill. Basically, kill the oldest, because they have less time to live, right, so that's very dark to say, but that's kind of the only metric you have.

Quotations have been modified to assist with readability. Meaning and intention has been retained.

Suggestions for Regulators

- Take Ethics Seriously
- Consider if Characteristics SHOULD Play a Role
- Who Do You Most Want to Protect?
  - Drivers
  - VRU
- Take into Consideration Socio-Economic Fairness

Select Reading

- Moral Machine Experiment." *Nature* 563 (7729): 59–64. https://doi.org/10.1038/s41586-018-0637-6.
- Bauman, Melissa, and Alyson Youngblood. 2017. "Rand Corporation." *Why Waiting for Perfect Autonomous Vehicles May Cost Lives* (blog). 2017. https://www.rand.org/blog/articles/2017/11/why-waiting-for-perfect-autonomous-vehicles-may-cost-lives.
- Emerging Technology from the arXiv. 2015. "Why Self-Driving Cars Must Be Programmed to Kill | Mit Technology Review." MIT TEchnology Review. 2015.
- Etienne, Hubert. 2021. "The Dark Side of the 'Moral Machine' and the Fallacy of Computational Ethical Decision-Making for Autonomous Vehicles." *Law, Innovation and Technology* 13 (1): 85–107. https://doi.org/10.1080/17579961.2021.1898310.
- Gill, Tripat. 2021. "Ethical Dilemmas Are Really Important to Potential Adopters of Autonomous Vehicles." *Ethics & Information Technology* 23 (4): 657–73.
- Kalra, Nidhi, and David G. Groves. 2017. "Rand Corporation." *The Enemy of Good: Estimating the Cost of Waiting for Nearly Perfect Automated Vehicles* (blog). 2017.
- Kriebitz, Alexander, Raphael Max, and Christoph Lütge. 2022. "The German Act on Autonomous Driving: Why Ethics Still Matters." *Philosophy & Technology* 35 (2): 29. https://doi.org/10.1007/s13347-022-00526-2.
- Othman, Kareem. 2021. "Public Acceptance and Perception of Autonomous Vehicles: A Comprehensive Review." *AI and Ethics* 1 (3): 355–87. https://doi.org/10.1007/s43681-021-00041-8.
- Rowthorn, Michael. 2019. "How Should Autonomous Vehicles Make Moral Decisions? Machine Ethics, Artificial Driving Intelligence, and Crash Algorithms." *Contemporary Readings in Law and Social Justice* 11 (1): 9–14. https://doi.org/10.22381/CRLSJ11120191.