Yonsei University & Technical University of Munich
Joint Seminar
Ethics for Autonomous Driving and Artificial Intelligence - Germany and Korea

Through this seminar, the Yonsei University School of Business BK21FOUR Program, the Center for Global ESG and Business Ethics at Yonsei University, and the Institute for Ethics in Artificial Intelligence at the Technical University of Munich, and the Korean Logistics Society seek to examine the ethical and legal issues as well as discuss further possible research and improvements in the real world and academia. Anyone that's interested in this topic is welcome to join us!

Venue

Yonsei University School of Business, Room B101, Seoul, Korea &
Zoom: https://url.kr/m7ed1l

Date & Time

9-11am, 23. August 2022 [Germany]
4-6pm, August 23, Tuesday, 2022 [Korea]

Schedule

Host: Prof. Soon Hong Min (Yonsei University, Center for Global ESG and Business Ethics)

4:00 pm – 4:05 pm: Introductory remarks by Prof. Ho-Young Lee (Yonsei University, Director of the Center for Global ESG and Business Ethics)
4:05 pm – 4:10 pm: Introductory remarks by Prof. Christoph Lütge (Director, Institute of Ethics in Artificial Intelligence)
4:10 pm – 4:15 pm: Welcoming speech by Mr. Wolfgang Rechenhofer (Head of Cultural, Legal and Consular Affairs at the German Embassy in Korea)

Part 1: Ethical and Legal Aspects of Autonomous Driving in Germany and Korea

4:20 pm – 4:40 pm: Autonomous Driving Ethics and Legislation by Dr. Alexander Kriebitz (Postdoctoral Researcher at TUM, Institute of Ethics in Artificial Intelligence)
4:40 pm – 5:10 pm: Korean Ethics Guideline for Automated Vehicles and Legislative Implications by Prof. Kee Yeon Hwang (Hongik University, Civil Engineering)

Part 2: Practical Application of Autonomous Driving in Germany and Korea

5:05 pm – 5:25 pm: The Regulation on Autonomous Driving in Germany by Dr. Janis Kesten-Kühne (PwC Germany, Manager of Artificial Intelligence and Autonomous Driving)
5:25 pm – 5:45 pm: Test & Evaluation for Urban Connected Automated Driving Systems in Korea by Dr. Young-Jun Moon (Korea Transport Institute, Chief Director of SOC Digitalization Research Center)

Q&As and Concluding remarks
5:45 pm – 5:55 pm: Q&A's
5:55 pm – 6:00 pm: Concluding remarks

Speaker bios

Ho-Young Lee (Professor at Yonsei University School of Business, Managing Director of the Center for Global ESG and Business Ethics, Ph.D. in Business Management)

Christoph Lütge (Professor at TUM, Director of Institute of Ethics in Artificial Intelligence at TUM, Ph.D. in Management Information Systems)

Soon Hong Min (Professor at Yonsei University School of Business, Deputy Director of the Center for Global ESG and Business Ethics, Ph.D. in Business Management)

Alexander Kriebitz (Senior Researcher at TUM, Institute of Ethics in Artificial Intelligence, Ph.D. in Business Management)

Kee Yeon Hwang (Professor at Hongik University, Urban & Civil Engineering, Ph.D. in Urban and Transportation Planning)

Janis Kesten-Kühne (PwC GmbH, Manager of Artificial Intelligence and Autonomous Driving, Ph.D. in Business Management)

Young-Jun Moon (Korea Transport Institute, Chief director of SOC Digitalization Research Center, Ph.D. in Civil and Environmental Engineering)

Wolfgang Rechenhofer (Head of Cultural, Legal and Consular Affairs at the German Embassy in Korea)

Presentation Abstracts

Part 1

Presentation 1: Ethics and Legislation on Autonomous Driving in Germany (Dr. Alexander Kriebitz)

As a leading international producer and exporter of vehicles, Germany has evolved as a frontrunner in designing ethical and legal frameworks concerning autonomous driving. Two major steps mark this development:

The 2017 German Ethics Code is the first normative codification related to ethical issues of AVs with a specific focus on dilemmatic situations. The Ethics Code has been the result of an interdisciplinary and multi-stakeholder cooperation involving experts from academia, religious institutions, NGOs and representatives of the car manufacturing industry. 2021 has witnessed a further notable development, namely the passing of the German Act on Autonomous Driving. The Act constitutes the first national framework on level four autonomous vehicles and has received attention from policy makers, AI ethics scholars and legal experts in autonomous driving.

Owing to Germany's role as a global hub for car manufacturing, the presentation sheds light on the act's position within the ethical discourse and how it reconfigures the balance between legislation and ethical frameworks. Specifically, it highlight areas that need to be more worked out in the future either through ethical conventions, corporate measures or legal measures and examine how the law can be incorporated into the existing discourse on the regulation of technologies. Based on this examination, the presentation derives implications for future discourse and elaborate on companies' responsibilities in developing autonomous driving technologies in an ethical sense.

Presentation 2: Korean Ethics Guideline for Automated Vehicles and Legislative Implications (Dr. Hwang, Kee Yeon, Hongik University)

Thanks to the rapid development of science and technology, autonomous vehicle is expected to remarkably improve human safety and protect human lives during its operation, compared to conventional vehicles driven by people. However, even if autonomous vehicles are manufactured technically perfect, it might be practically impossible to completely prevent or avoid safety issues, such as accidents, loss of life and property, and other problems that are difficult to predict beforehand.

Even if autonomous vehicles make judgement about situations and respond to them without human intervention through autonomous driving system, it is difficult for machines to take responsibility for the above-mentioned problems. Therefore, designers, manufacturers, administrators, service providers, and users of autonomous vehicles should take their own share of responsibility. However, criteria for determination of responsibility cannot be determined meticulously in advance. As such, ethical guidelines are required to prevent loss caused by accidents, to eliminate in advance ethical obstacles, and to lay the groundwork for AV-related legislation for

commercialization.

This AV ethical guideline is designed to promote positive effects, such as ensuring convenient and free mobility and reducing damage from traffic accidents, etc. with the introduction of autonomous vehicle; to reduce negative effects that autonomous vehicle might bring about; to present ways to clarify responsibilities of participating actors. Also, the guideline recommends each actor to comply with respective action principles originated from the basic value of autonomous vehicle.

This ethical guideline has a nature of basic direction in relation to autonomous vehicles, and it can be referred to determining overall legislative directions associated with autonomous vehicles, including design, manufacturing, management, service provision and utilization.

Part 2

Presentation 3: A road to admission of trustworthy autonomous vehicles on the basis of AFGBV (Dr. Janis Kesten-Kühne, PwC Germany)

Autonomous driving is increasingly transforming the transportation industry and will be one of the most important and disruptive technologies in mobility in the coming years. However, full market penetration is currently still difficult due to concerns regarding the security and trustworthiness of the underlying technology. Well established governance frameworks that are accepted by stakeholders in the industry, by regulatory authorities and by the general public are necessary in order to pave the way for increased trust in the technology and to serve as enablers for the latter.

In May of 2022, the german legislative ratified the Autonomen Fahrzeug-Zulassungs- und Betriebsverordnung (Autonomous vehicle admission- and operations-regulation) or AFGBV for short, the first piece of legislation specifying technical requirements for autonomous vehicles. Relying on standards such as ISO 26262 (Road vehicles - functional safety), ISO/PAS 21448 (Road vehicles - Safety of the intended functionality) and UN155 (Cyber security and cyber security management system), the AFGBV places the German regulatory authorities at the forefront in the field of trustworthy autonomous vehicles.

Implementing the diverse requirements of the AFGBV, i.e. the Standards and Regulations referenced therein, proves to be difficult in practice, as there are no established processes and no concrete guidelines for the approval of autonomous vehicles. In this talk, we introduce the AFGBV, discuss its position in the regulatory landscape in Germany in particular and in the EU in general and give an outlook on its utility in the context of the admission process of autonomous vehicles in Germany. Furthermore, we introduce some operable approaches to the complex challenges we have identified from our experience as consultants to a German startup company, currently developing a people mover. We furthermore comment on the necessity of

AI governance in the context of autonomous vehicles, as provided by frameworks such as the proposed EU AI Act.

Presentation 4: Test & Evaluation for Urban Connected Automated Driving Systems in Korea

Presenter: Dr. Moon, Young-Jun, Korea Transport Institute (KOTI)

Recently there are more than 50 cities in the world which have adopted a kind of automated driving systems to be tested as a new urban mobility to upgrade their conventional public transport systems. Similarly in Korea, a few R&D programs are under tested and evaluated in several cities in order to adapt urban connected automated driving vehicles for the application to first and/or last mile connectivity services between different trip zones as a public or shared transport.

The potential feasibility of the connected automated driving systems would be demonstrated with comparisons of different cases in the world in terms of connected and automated functions, mobility purposes, infrastructure cooperation, policies with regulation and legislation, etc. In addition, methodology and standardization would be also discussed to provide infrastructure-guided localized services with connected automated mobility including personal mobility, micro-electric mobility, urban automated shuttle, to be applicable in the specific urban roadway sections, such as signalized and/or unsignalized intersection, roundabout, weaving area, ramp metering zone, etc.

Speakers' & Presenters' Bios

Prof. Dr. Christoph Lütge studied business informatics and philosophy. He took his PhD at TU Braunschweig in 1999 and his habilitation at LMU Munich in 2005. He was awarded a Heisenberg Fellowship in 2007. Since 2010, he holds the Chair in Business Ethics at TUM, and since 2019, he is also the Director of the TUM Institute for Ethics in AI. Most recent books: "An Introduction to Ethics in Robotics and AI" (Springer, 2020, with coauthors) and "Business Ethics: an Economically Informed Perspective" (Oxford University Press, 2021, with M. Uhl). In 2020, Lütge was appointed Distinguished Visiting Professor of Tokyo University. He has also held visiting positions at Harvard, Pittsburgh, Taipei, Kyoto and Venice. He is a member of the Scientific Board of the European AI Ethics initiative AI4People as well as of the German Ethics Commission on Automated and Connected Driving.

Wolfgang Rechenhofer is a German Diplomat, who started his career in 1990. He served in different countries: India, Italy, Oman, Switzerland, Greece and Netherlands. In Seoul he is currently Head of Cultural, Legal and Consular Affairs in the Embassy of the Federal Republic of Germany since July 2019. Mr Rechenhofer studied economics and graduated in 1987 in Bochum/Germany. He was member of the Chair of International Economics at the University of Bochum until he started his diplomatic career. He was specialized on International Relations in the fields of currency baskets and Exchange Rate Management. Wolfgang Rechenhofer is married and has three children.

Dr. Alexander Kriebitz is post-doctoral researcher at TUM and lectures on business ethics and ethics of artificial intelligence in Munich, Vienna and Moscow. His current project concerns the study of the division of labor between state and business in fulfilling normative principles related to the development and use of AI. To this end, Alexander Kriebitz published in the Business and Human Rights Journal, the Human Rights Review and Philosophy and Technology.

Dr. Hwang, Kee Yeon is currently a professor of Department of Urban Planning and Design and teaches transportation engineering and smart mobility. He served as vice president of Hongik university and dean of college of engineering. He also served as president of Korea Transport Institute (KOTI), a central government research arm in land transport, aviation, and logistics for 3 year from 2008 to 2011. Under his leadership, KOTI received the best research institute award for three consecutive years from the National Association of Economic, Literary and Social Sciences under the Prime Minister's Office. Before joining Hongik university, he was a senior research fellow and the Director of the Research Center for Cheonggyecheon stream restoration at the Seoul Institute, a think-tank for Seoul Metropolitan Government. He is currently a member of the Korea Engineering Academy, co-chair of the Future Forum of Automated Vehicle, and chairman of the Kakago Mobility advisory board. He received Ph.D. in urban and transportation planning from the University of Southern California in the United States. He is the author of 140 professional journal articles and 10 books and a columnist for Financial News, a daily economic

newspaper. In 2005, he received the Order of National Merit from the South Korean government for his work on the Cheonggyecheon restoration project.

Dr. Janis Kesten-Kühne studied mechanical engineering and industrial engineering at Technical University Clausthal. He earned his Doctorate in computer science and economics with a thesis focusing on agent-based simulations and artificial intelligence, also from TUC. He has worked as a specialist for AI, Cloud and Cybersecurity at Rheinmetall before taking on a position as manager with PwC Germany focusing on Trustworthy AI.

Dr. Moon, Young-Jun is a chief director of SOC Digitalization Research Center in Korea Transport Institute (KOTI). He has joined KOTI in 1998, right after he had graduated in the Univ. of Illinois at Urbana-Champaign (UIUC) with a doctoral degree of Transportation Engineering in the Dept. of Civil and Environmental Engineering. He started his career as a research engineer in the Agency for Defense Development (ADD) in 1987, developing Korean Surface to Air Missile (KSAM) for the military weapon systems. He participated in ITS World Congress and the International Standard Organizations in ITS area as a leader of ITS R&D in Korea from 1999 for developing a variety of ITS projects. Since then, he has been involved in ISO/TC204 as not only an expert in WG14 for vehicle/roadway warning and control system but also a Convenor of WG17 for nomadic & portable devices. He has been a member of the international program committee (IPC) of ITS World Congress since 2005 and also a chair of IPC for the 17th ITS World Congress in Busan, 2010. He has joined a committee member of Transportation Research Board (TRB) on ITS since 2013. He became a member of National Science & Technology Council (NSTC) in 2010 until 2013, and also a chair of Civil, Public, Air & Space R&D Committee since 2019 under Presidential Advisory Council on Science and Technology (PACST). He has also been a consulting director of transportation division in PyeongChang 2018 Olympic and Paralympic Winter Games Organizing Committee since 2010. He has served as an Advisory Director to the Minister of Land, Infrastructure and Transport (MoLIT) from 2016 until 2017.