



Housseem Abdellatif leads autonomous driving at TÜV Süd

New rules

TÜV Süd is developing ways to assess AV safety and security, which it hopes will feed in to global regulatory efforts

by Izzy Kington

Dr Housseem Abdellatif

» Abdellatif joined TÜV Süd in December 2016 to lead its global autonomous driving initiative. A mechatronics engineer, he earned his PhD in control systems and robotics. Throughout his time in the

automotive industry, Abdellatif has worked on everything from electronics, function and software development including combustion engine control, to electromotors, battery and energy management systems, and ADAS.



“WE NEED NEW METHODS TO ASSESS THE SAFETY OF AI SYSTEMS, BECAUSE THEY BEHAVE IN A COMPLETELY NON-DETERMINISTIC AND UNPREDICTABLE WAY”

Housseem Abdellatif, TÜV Süd

Autonomous driving officially became a global initiative for TÜV Süd in January 2017. In this particular field, the organization is now focusing on safety and security assessment and the approval of autonomous driving functions, systems and vehicles.

“When it comes to autonomous driving, everybody is worrying if the technology is safe or not,” says Dr Housseem Abdellatif, global head of autonomous driving at TÜV Süd. “We want to develop methods for assessing safety and security, and we want these methods to find their way into regulation.”

DB’s autonomous bus

One recent project saw TÜV Süd work with Deutsche Bahn (DB), which wanted to operate an autonomous bus shuttle in Bad Birnbach, a spa town in southern Germany. “DB targets include first- and last-mile transportation to and from railway stations in its mobility offering,” says Abdellatif. “The first challenge is that on public roads, normally it is mandatory to have a driver on board as a fallback for safety-fail issues.”

TÜV Süd assessed the risks of the whole system (vehicle, road and use case) and suggested solutions to cope with the regulatory challenge. Among the solutions were speed limitation and an emergency operator. “We combined state-of-the-art national regulation compliance and functional safety methods to provide a blueprint for how to assess such systems,” says Abdellatif. “We are working in national working groups to promote the adoption of this blueprint as a general method for all assessors. We will use this methodology for similar projects all over the world.”

Abdellatif notes that TÜV Süd is to partner with DB again. Collaborations planned include projects at Munich Airport and at an autonomous driving test field in Baden Württemberg, Germany.



TÜV Süd combined state-of-the-art compliance with functional safety methods on DB’s autonomous bus

TÜV Süd’s latest developments in real-world testing include a current project to create a complete equipment setup for scenario-based testing on real roads and on test tracks. The methodology is being developed for the Pegasus AV testing project in Germany and the Centre of Excellence for Testing & Research of Autonomous Vehicles (CETRAN) in Singapore. “In addition, we are investing to develop and test our equipment,” says Abdellatif.

Simulation’s role in AVs

However, Abdellatif also notes that simulation is vital in the validation of AVs. “A huge number of test cases and test scenarios must be tested,” he says. “This can only be achieved using simulation that allows for scaling out.”

TÜV Süd is contributing its expertise on simulation as part of the CETRAN project. “We use simulation for the virtual assessment of critical scenarios in the urban



TÜV Süd is working on methodology for the Pegasus AV testing project in Germany

environment,” says Abdellatif. “Additionally, we are cooperating with universities and partners to evaluate the potential of simulation for the homologation and type approval of ADAS and AD functions. In all our activities, we are looking at how simulation can be used for system approval and how to define and/or make it reliable for approval.”

AI certification

Another avenue of research is how self-driving AI systems can be certified. TÜV Süd is cooperating with the German Research Center for Artificial Intelligence (DFKI) to develop an open platform, Genesis, for the certification and assessment of AI modules for autonomous driving.

“Safety assessment is currently based on the assumption that systems are fully trackable and deterministic,” says Abdellatif. “We need new methods

to assess the safety of AI systems, because they behave in a completely non-deterministic and unpredictable way.”

Data privacy is another important topic to research. “Many stakeholders – including regulators, insurance companies, service providers and third parties – are interested in accessing car data,” says Abdellatif. “We think this should be possible and regulated without compromising data privacy. We are working internally and with manufacturers to find suitable solutions.”

In all its work, TÜV Süd is considering how AVs could be regulated. “We will provide our results to the regulation bodies and hope to contribute to the worldwide harmonization of regulations – a framework is currently lacking.”

If all relevant safety issues are addressed correctly, Abdellatif believes commercially available Level 5 AVs could be available as soon as 2030. ◀

CONTACT
TÜV Süd | inquiry no. 502
To learn more about this advertiser, please visit:
www.ukimediaevents.com/info/avi