



EMPLOYEE STORY | AUTOMATED DRIVING

For his work, Sascha uses methods that are familiar to him – from his hobby as a passionate gamer.

Passionate
gamer
meets...

highly-
automated
mobility.

●●● Sascha had his career begin in one of the most cutting-edge subjects of the automotive industry – that of highly-automated driving. However, this is not enough to stimulate the 28-year-old mechatronics engineer. In this interview, he explains why he also finds it extremely exciting to work on the automated vehicle using gaming industry techniques.

●●● **Sascha, gaming meets automated driving? What is this about?**

Sascha: In order to be able to bring the autonomously-driving vehicle out in the open and onto the streets, the development of image-processing systems is immensely important. In doing so, we mainly rely on model-based development and simulation. In this case, however, not only is the function simulated, but also the sensors, for example, ultrasound or RADAR even – the elements that

equip the vehicle with eyes and ears. To verify and validate the sensors early on, a realistic simulation of the environment is necessary. ITK has made use of the methods from the gaming industry for the verification and validation of sensors.

What does that mean exactly – “You have made use of the gaming industry”?

Sascha: Computer games have been getting increasingly bigger in the last few years, more photo-realistic with higher resolutions and higher frame rates. Especially in the recent past with the advent of 4K and virtual reality, new challenges to consumer processors and graphics cards will be presented. Realistic 3D scenes must naturally be very rich in detail. Simulated surroundings for the autonomous driving will have to meet similar demands in the future. Here’s where one can fall back on the already advanced technology and methodology of the gaming industry. This requires, in addition to high-performance hardware, a powerful 3D engine – a middleware, which is responsible for the purely graphic representation of the 3D scene.

EMPLOYEE STORY | AUTOMATED DRIVING

Continuation of
Interview

Is this why you applied for the subject area automated driving at ITK? In the hopes that your passion for gaming will also be applied to your professional life?

Sascha: Ha! No, no. Even if I enjoy gaming in my personal time, I already considered the automobile branch during the last months of my mechatronics studies as my passion. New technologies with regard to automated driving particularly interested me – the fascination for sensor technology had then captivated me during my master's program. In my master's thesis, which I already wrote at ITK, the topic was to incorporate ultrasound sensors in a vehicle model. My pet project on this subject was the sensor modelling in MATLAB Simulink. My mechatronics background combined with control engineering made for a perfect fit.

What is it specifically that excites you on the topic of automated driving?

Sascha: Next to the fact that it is currently THE top subject of the field, I find the new approaches we currently pursue to be hugely exciting. With the previous approach to sensor simulation, one was often faced with the difficulty that the simulation of soundwaves is very computationally intensive – and meanwhile, due to the specified high demands, almost impossible. In the search for alternatives to realize a simulation that is as exact as possible and yet still calculable, the raytracing method was used. It is actually used to create photo-realistic images – as mentioned, a complex approach from the gaming industry. In no way would I describe myself as a gaming engineer because, despite these gaming concepts, we are very – with relation to the vehicle – technologically on the move. One can see rather well, with the concrete example of my project involving environmental simulation, how one can use gaming engines to create something that is graphically impressive. The playing instincts

were awoken in me – that, which I know from the couch, is what I also wanted to use in the professional environment!

For me, it's very exciting because I approach this topic from the angle of sensor technology and I have the opportunity to help simulate many of the sensors. As a result, I not only get a deep look into the virtual verification and validation, but I also take my first personal steps towards application development.

With which colleagues do you work together in a team? Is the topic of automated driving just something for mechatronics engineers?

Sascha: The topic of automated driving is extremely widespread. From the subject of "computer vision", where colleagues literally teach the vehicle to see, to the connectivity with the environment – all the way to cognitive intelligence, which allows a vehicle to make the "right" decisions, as well as other already known topics like safety and security, which are also getting increasingly more complex, automated driving offers the largest range of playing options for engineers, natural scientists and computer scientists.

This interdisciplinary subject area needs expert specialists from various disciplines. The pure computer scientist is just as important as colleagues from model development and sensor engineering. Image-processing experts are necessary when camera systems are involved. Ever increasingly, topics such as machine learning also come along. Recently, a colleague became a part of our team that isn't from a technological study field, rather from the domain of 3D modeling. Next to know-how with tools like Visual Studio for C#, Matlab Simulink, and GPU programming, it is important to have an open mind to tread new paths and to find new approaches to problem-solving.



Sascha, thank you very much for the insight into your passion for technologically innovative challenges. All the best at ITK!

www.partners-create-perspectives.com

ITK Engineering GmbH
Headquarters: Ruelzheim
Im Speyerer Tal 6
76761 Ruelzheim, Germany

Petra Gruber
Head of Recruiting
+49 (0)7272 7703-0
student@itk-engineering.com

Follow us on:



www.itk-engineering.com
www.itk-karriere.com