

Dear Recruitment Committee,

I am writing to express my strong interest in the postdoctoral position in the Autonomous Vehicle Lab. With a Ph.D. in Precision Engineering from the University of Tokyo and current experience as a perception developer at Bosch Japan, I bring a unique combination of expertise in wave-optics simulation, sensor fusion, and algorithm development. I am excited about the opportunity to contribute to both the scientific advancement and the practical realization of autonomous driving technologies at TMU.

At Bosch, I have been working on perception algorithms for advanced driver-assistance systems (ADAS), focusing on radar-camera fusion and performance evaluation in NCAP scenes. This industrial role has strengthened my skills in large-scale software integration, scenario-based validation, and system-level performance metrics. However, much of my work has necessarily been driven by short-term solutions for consumer products. I now seek to move beyond incremental improvements and contribute to the fundamental challenges of autonomous driving—developing high-end frameworks and architectures that remain open problems in both industry and academia.

My doctoral research at the University of Tokyo centered on optical measurement, computational modeling, and deep learning methods for super-resolution imaging. These projects, supported by the JST CREST program and the JSPS DC1 Fellowship, provided me with strong experience in simulation, interdisciplinary collaboration, and leadership of complex research tasks. Although the application field was different, the skills in simulation, algorithm design, and system evaluation are directly transferable to the research on sensor simulation, scenario-based testing.

Beyond technical contributions, I have consistently taken active roles in collaborative projects. In the JST CREST initiative, I coordinated research between university and institute teams to develop high-resolution measurement systems. At Bosch, I regularly collaborate across German, Japanese, and Hungarian teams to design and tune perception algorithms. Working with German colleagues in particular has given me great appreciation for their precision and systematic approach—qualities that resonate strongly with my own working style and motivate me to continue my career in Germany. Since TMU is deeply connected to Germany's tradition of excellence in automotive engineering, I believe it is the ideal place for me to advance my research and grow as a leader.

I am particularly motivated by the lab's mission to extend the state of the art in autonomous driving through complex scenario evaluation, sensor simulation and fusion tracking. I believe my combined background in perception development, simulation, and applied AI makes me well positioned to contribute to the design of simulation of driving for special scenario. Moreover, I am eager to help establish new collaborations with both industrial and academic partners and to play an active role in shaping the future direction of the AV Lab.

Thank you very much for considering my application. I would welcome the opportunity to discuss how my skills and experiences can support your research and flagship projects. I look forward to the possibility of contributing to your team.

Sincerely,

Yizhao Guan