Guiding and Guarding Deep Learning for Autonomous Vehicles using Scenario-Based Programming

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In this project, we have made significant progress towards the long-term research goal of integrating deep learning and software engineering, in a way that will allow us to produce much safer and more robust smart transportation systems. Specifically, the collaboration between the HUJI and BGU research groups revolved around one axis in which we have successfully used hand-crafted, scenario-based rules to enhance a learning-based system, injecting into it expert knowledge that allowed it to perform significantly

fewer safety violations; and around a complementary axis, in which we developed means for enhancing and augmenting an already existing learning-based system with hand-crafted modules. The results of this project appeared as a research paper at the prestigious Modelward 2022 and Modelsware 2023 conferences, as well as a SNCS 2023 journal paper and an Applied Sciences journal paper.