Leveraging Advanced Data to Develop an AI model Delivering Multimodal Safety

This work representing the SMART Grant project, a visionary initiative led by the Nashville Department of Transportation in collaboration with Tennessee State university, embarks on a transformative journey to revolutionize transportation safety leveraging multimodal data in North Nashville. At its core, this work integrates advanced LiDAR and video technology to meticulously collect and analyze traffic data, focusing on non-traditional safety incidents. The project aligns with the Vision Zero action plan, striving to significantly reduce traffic-related incidents (i.e. near miss scenario) particularly for pedestrians and bicyclists, who are traditionally underrepresented in safety analyses. We use YoLo Neural Architecture search (YoLo-NAS) AI Model on collected multimodal advanced LiDAR and video data to predict near-miss incidents to create a more inclusive and safer transportation environment. In our initial experimentation this cutting-edge approach shows at least 5% improvement than existing works in near-miss detection. Moreover, in the future, this work holds the promise of setting a new playbook for mitigating traffic collision after getting resourceful insights from near miss scenarios.

Keyword: YoLo-NAS AI Model, Vision Zero, Traffic incident reduction, LiDAR technology, Video analysis, Transportation safety