Computer Science Senior Design Laboratory

CADD-E

University of Kansas

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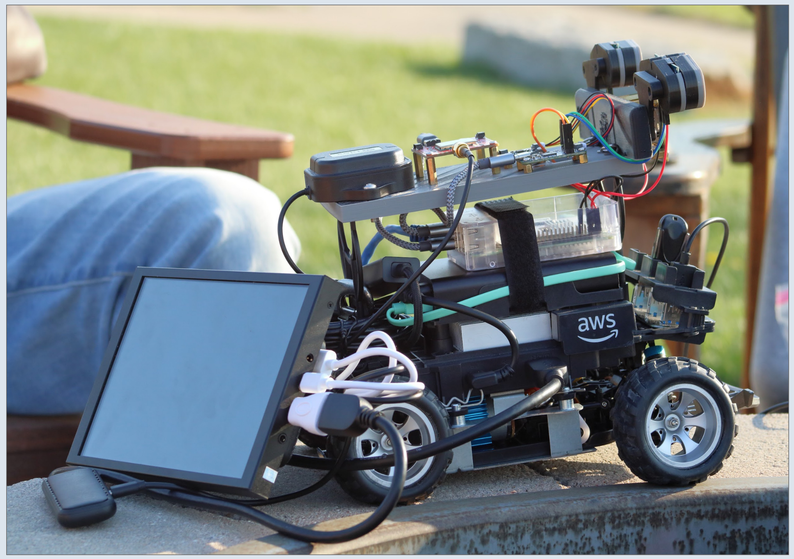
Design

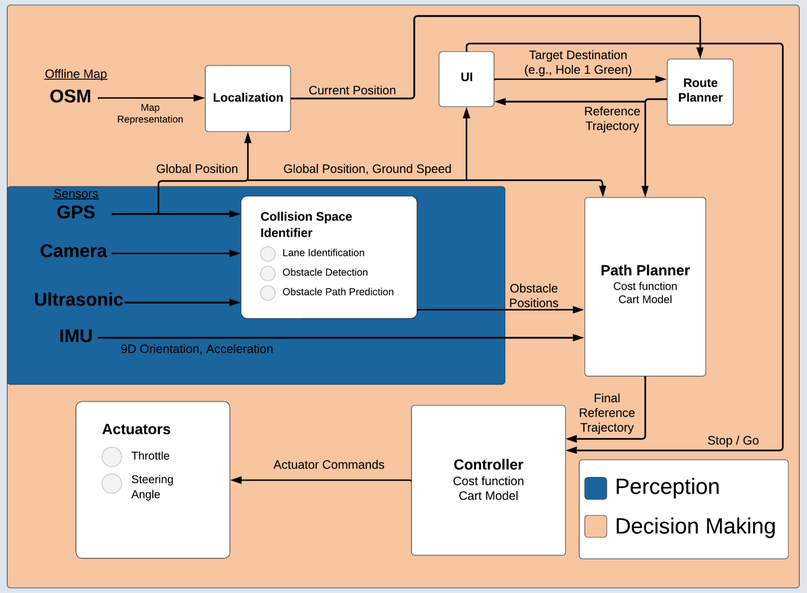
CADD-E (CAmera Directed Driving Endeavor) is a self-driving golf cart prototype. Our goal was enabling autonomous navigation of holes 1-9 at Lawrence Country Club with SAE Level 4 autonomy, i.e. requiring no user input in most conditions.



CADD-E implements the same perception and decision-making modules that would be used on a full-size autonomous vehicle. We performed on-site testing to verify our implementation.

Implementation

Sensor data is processed on a Raspberry Pi and sent to decision-making systems on the DeepRacer's onboard computer. The UI enables target location selection. Planners generate a localized path which avoids obstacles. The controller sends commands to the actuators to follow this path.



Ethics and IP Issues

The use of many open-source libraries necessitates consideration of licensing restrictions before commercialization. Implementation on a golf cart would require thorough testing to prevent the possibility of user harm, for example adhering to ISO 26262 standards.

GitHub