

Summary

In my thesis i was creating different scenarios in SVL simulator where Iseauto AV shuttle was colliding with pedestrians. Main goal was to check if AV shuttle interaction with pedestrians is safe and if not make some suggestions on what needs to be improved. Since i don't possess Iseauto AI Autoware hardware because it doesn't belong to me all i had to do is think of different scenarios, right code for them, check if they work, send them to Iseauto representative who connects them to AI and based on his results reach a conclusion if AV is safe and if it is not why.

I created seven scenarios, in six of them pedestrian crosses the road from different sides and angles and in the seventh one it was a crowd of pedestrians. Based on codes provided by SVL team on their official GitHub I have written code where I define AV and pedestrian position on a map called BorregasAve (which is also provided by SVL team with simulator by default), their moving vectors and their speed. I set their speed this way so that if simulation is not run with Autoware they collide, code stops simulation and shows which pedestrian was run over by AV.

The Iseauto representative ran my simulations number one, three, four and seven with connected AI and recorded them on video and sent that video to me. Based on his recordings in all cases AV didn't collide with pedestrians and let them cross the road which means that in the cases I brought up in my scenarios AV is safe for pedestrians.

Kokkuvõte

Lõputöös lõin SVL-i simulaatoris erinevaid stsenaariume kus Iseauto AV süstik pörkas kokku jalakäijatega. Peamine eesmärk oli kontrollida, kas AV-süstiku suhtlemine jalakäijatega on ohutu, ja kui mitte, siis teha mõned ettepanekud, mida tuleks parandada. Kuna mul pole Iseauto AI Autoware riistvara kuna see ei kuulu mulle, pidin ma lihtsalt mõtlema välja erinevad stsenaariumid, kirjutama nende jaoks õige koodi, kontrollima, kas need toimivad, saatma need Iseauto esindajale, kes ühendab need tehisintellektiga ja tema tulemuste põhjal hinnata, kas AV on ohutu ja kui see pole miks.

Koostas in seitse stsenaariumi, neist kuues ületab jalakäija teed erinevatest külgedest ja nurkadest ning seitsmendas oli see jalakäijate rahvahulk. Tuginedes SVL-i meeskonna poolt nende ametlikul GitHubil esitatud koodidele, olen kirjutanud koodi, kus määratlen BorregasAve-nimelisel kaardil AV ja jalakäija asukoha (mida SVL-i meeskond pakub ka vaikimisi simulaatoriga), nende liikuvad vektorid ja kiirus. Seadsin nende kiiruse nii, et kui simulatsiooni Autoware'iga ei käivitata, pörkuvad nad kokku, kood peatab simulatsiooni ja näitab, millisele jalakäijale AV otsa sõitis.

Iseauto esindaja käivitas minu ühendatud simulatsiooni number üks, kolm, neli ja seitse koos AI-ga, salvestas need videole ja saatis seda video mulle. Tema lindistuste põhjal AV lasi jalakäijatel ohutult ühe tee poolest teise minna, mis tähendab, et minu stsenaariumites välja toodud juhtudel on AV jalakäijatele ohutu.