OpenPilot

Ghetto Longitudinal Control

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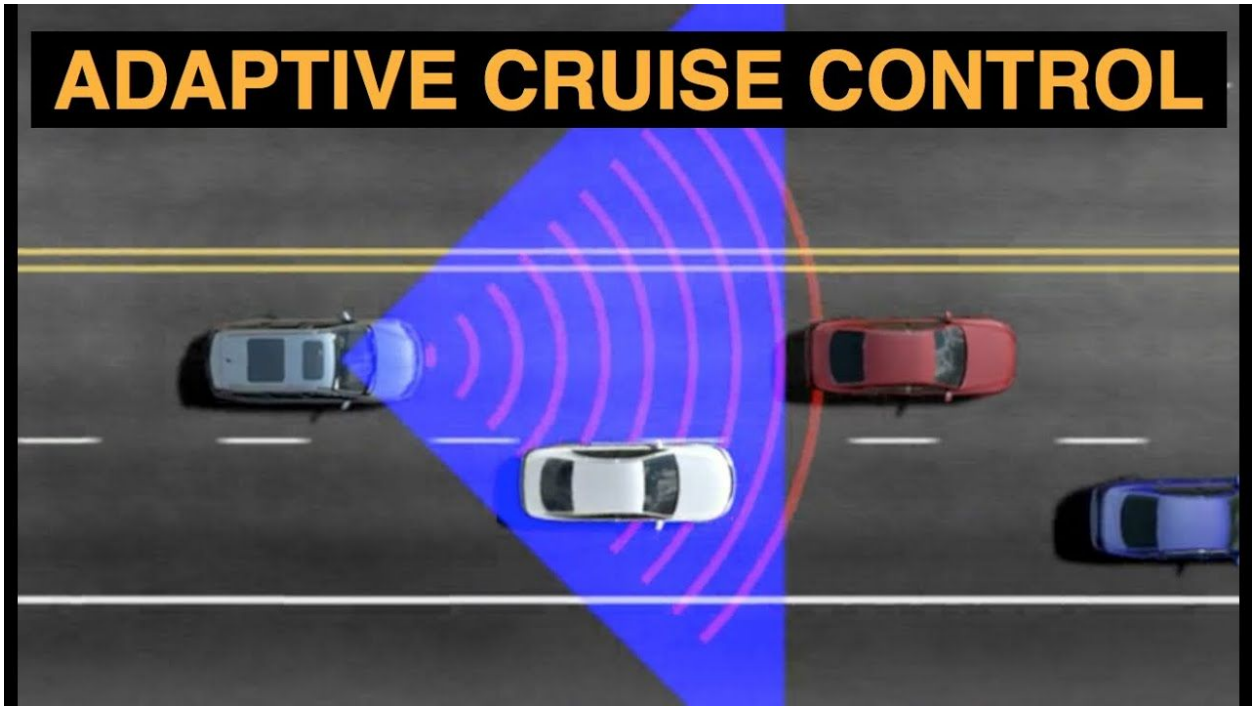
1) Introduction

What is longitudinal control?

Well it's Adaptive Cruise Control found on most of the new cars where car can slow down, resume using radar which comes as stock feature however in order to hack radar it's not easy that's why most of the ported cars do not have Longitudinal control.



What are common cars that do not have longitudinal control?

1. Well most of common will be Honda's with Bosch radar except for Nidec.

2. Most of the new Toyota's that doesn't have DSU.

3. Other new ported cars in general.

What is the difference with stock ACC and OP?

Stock is stock it will work as it is depending on the car some radars do have restriction which can't be overwritten example shown below with ILX where Accel and Steer is not available under 25 mph so those restrictions are still true when using OP. As of right now biggest feature that separates from stock and OP is slowing down at turns and soon will be traffic lights and stop signs.

Make	Model	Supported Package	Lateral	Longitudinal	No Accel Below	No Steer Below	Giraffe
Acura	ILX 2016-17	AcuraWatch Plus	Yes	Yes	25mph1	25mph	Nidec

What about comma pedal?

As found on description of comma pedal it basically says the following:

> “It allows you to "virtually" press the pedal, enabling stop and go cruise control on select cars.”

As quoted above it basically is a SPAM to resume which works with stock ACC and works with OP as well so you don’t really need OP’s longitudinal control for stop and go if stock does it already. However to have best OP experience in general OP’ longitudinal control works as PBJ. Since it’s PITA to hack radar, this paper’s focus is ghetto way to get longitudinal control for now just slowdowns at curve feature and speed limit.

2) Pros and Cons for running parallel radar

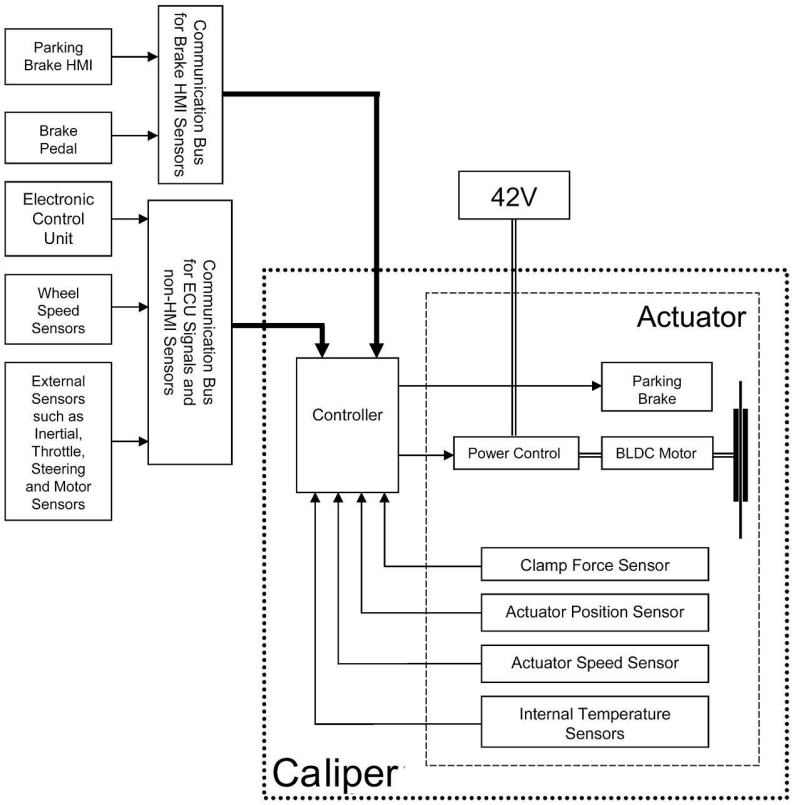
Pros

1. Speed limit will work

2. Slow downs at curves will work

Cons

1. Only down side the braking which won't be possible unless the real radar is hacked or replaced other way will by brake by wire. Please note when using brake by wire there will be conflict with real radar so braking is not safe unless radar is real completely disabled.



Since real radar is trying to do same thing as the parallel there will be conflict of overwriting the CAN messages where either braking will occur twice for same situation which won't be safe at all. However when adjusting the speed value +- it won't be issued at all since it's just same way you were to physically do it.

2. Another con is slow down won't be smooth there will be some delay same as if you were to decrease from the cruise button itself but it will do the trick though.

3) Solution

Solution was built by tesla folks which was DIY ACC using visiond as radar where logic is simple as if you were to slow down without disabling cruise you will either increase the

or decrease the speed by physical cruise button so except for using physical button why not code it? All of the supported cars already have the CAN messages for set speed and decreased speed however since there is no radar it's not able to do anything with it so solution is to run radar parallel along with real radar it can be either real radar or visiond based.

Slowing down at curves logic

When at curves the set speed will be decreased by 5-10 mph.

Speed limit logic

This will be another spam where it will overwrite the set speed so it can stay within speed limit.

4) Conclusion

I saw a lot of users with bosch wanted the slowdown feature but they were puzzled with radar issue so i decided to publish paper on ghetto way to get the feature without having to do much. I know it's not best way to do it but it's more logical way to do without doing much.Please do forgive me if i have made any grammar errors, English is not my first language.

★ Please note this project won't be upstreamed due to safety reasons however it will be a gimmick that we all can enjoy soon with help of community members.

5) Credits

Mad genius @BogGyver