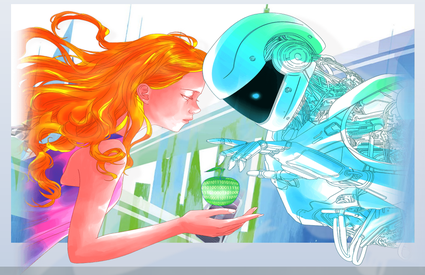


Smart Motion Drive for the Future Mobility

FORUM8

13th CPWC

Blooming

Overview

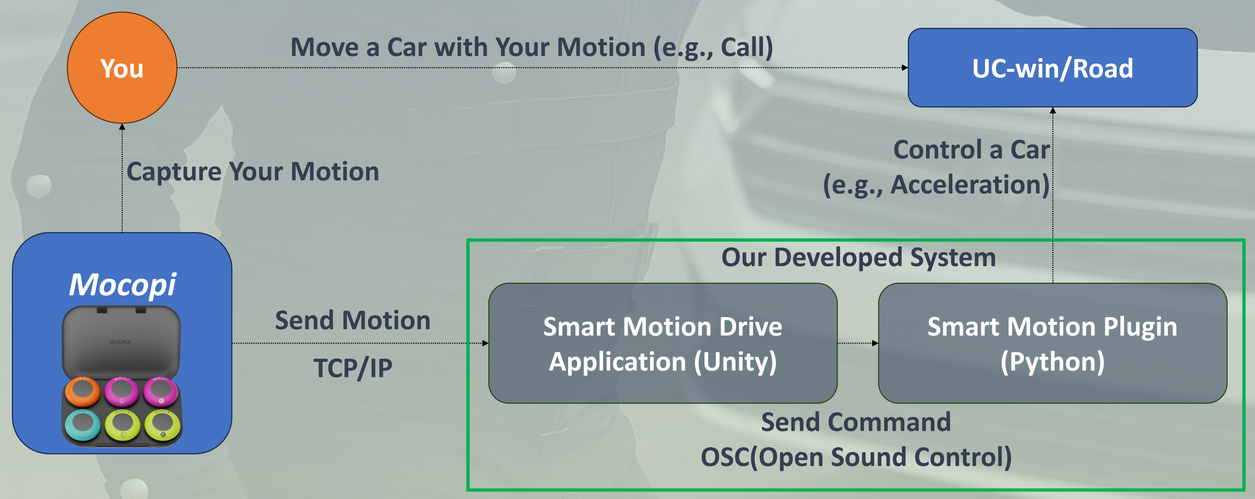
Smart Motion Drive introduces an innovative interaction between people and autonomous vehicles by integrating motion capture technology with driving systems. Using Sony's *mocopi* sensors attached to six body points, user motions such as raising a hand are translated into car control commands. The system supports two modes: Self-Driving Mode, enabling acceleration, turning, and stopping through gestures, and Auto-Driving Mode, allowing users to call or return a vehicle remotely. Implemented with Unity, Python, and UC-win/Road, the system empowers seniors and individuals with disabilities by promoting inclusive, joyful mobility within the Web 4.0 era, bridging digital and real-world transportation experiences.

Background

Web 4.0 will integrate the digital world and the real world.
Autonomous driving is one of the key technologies.
An inclusive society is needed where seniors and people with disabilities can live safely and joyfully.
To achieve this, we propose:

⇒New Technology for INCLUSIVE MOBILITY!

System Overview



Capture your motion using motion capture device (*mocopi*).
Six sensors are attached to key points of your body.
User motions are recognized as commands for an autonomous car.

You can control a car with your body motion!

Smart Motion Drive Application (Unity)

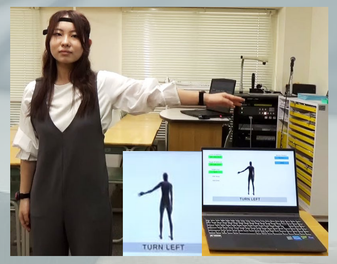
The avatar synchronizes with your motion. In addition, the application classifies the user's motion into commands (e.g., Call, Return). The recognized command is sent to Smart Motion Plugin(SmartMotonPlugin.py) via OSC.

Self-Driving Mode
Your motions are recognized as the following five commands.

Command	User Motion	Description
Accel	Raise Right Hand	Move the car forward.
Back	Raise Left Hand	Move the car backward.
Stop	Push Right Hand Forward	Stop the car.
Turn Right	Move Right Hand to the Right Side	Turn the car to the right.
Turn Left	Move Left Hand to the Left Side	Turn the car to the left.

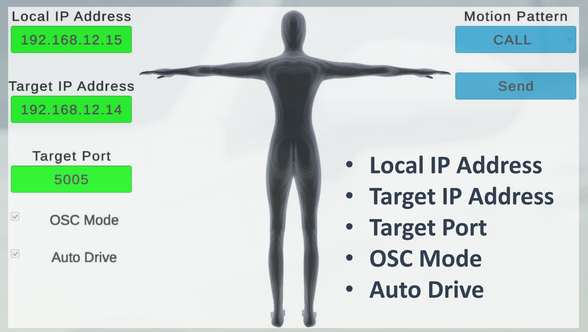
Auto-Driving Mode
Your motions are recognized as the following three commands.

Command	User Motion	Description
Call	Raise Right Hand	Call a car to your location.
Return	Raise Left Hand	Send the car back to a parking area.
Stop	Push Right Hand Forward	Stop the car.



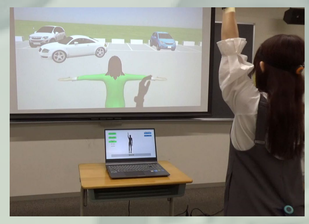
Motions for Self-Driving Mode: Turn Left

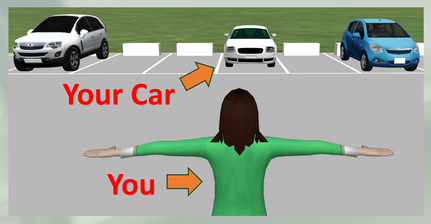
Motions for Auto-Driving Mode: Call



Application Scenario

Your car is in a parking area.
You want to call it to your side while standing outside the car.





Conclusions

Smart Motion Drive creates a new way of interaction between people and autonomous cars.
It empowers seniors and people with disabilities with joyful mobility.
Our goal is to design inclusive mobility for the Web 4.0 era.

Have fun with our Smart Motion Drive!