**Virtual Valet**
Arne Suppe, Luis E. Navarro-Serment, Aaron Steinfeld

Park or retrieve your vehicle remotely using only your phone or other mobile device.

Though some car manufacturers provide semi-autonomous parking options, most systems require a driver to be in the car for emergency braking purposes that reduce liability. Virtual Valet is a system that enables a vehicle to park itself without a driver. The user need not be present behind the wheel, or even within the car itself; but he or she can supervise the parking action remotely from a mobile device or phone. Virtual Valet aims to assist people who have trouble getting into or out of cars in tight parking spaces or who often need to be dropped off at the curb.

**TARGET POPULATIONS:**
- People who use wheelchairs or have reduced mobility
- The elderly
- People with neck or spinal cord injuries

**BENEFITS:**
- Increases mobility
- Adds flexibility in choosing destinations
- Reduces burden of infrastructure changes on parking facilities

**ABOUT THE RESEARCH:**
Virtual Valet provides a fully-autonomous method for supervising and controlling parking without being in the vehicle. Virtual Valet can function without GPS and is able to detect and avoid nearby obstacles. Human override controls are available through the interface allowing users to interrupt parking as needed.

The current system is tested on a Jeep Wrangler equipped with six SICK LMS 2-D laser scanners, various cameras, and a custom vehicle state measurement system utilizing GPS, inertial, and odometry sensors supplemented with a LIDAR-based landmark localization system.

“This in the past 30 years, there has been a 6-fold increase in the US population of wheeled mobility users. A large space is needed for these users to enter/exit their vehicles; however, most solutions are cost prohibitive. Virtual Valet is easy to implement and requires no change to existing parking facilities or infrastructure.”

--Arne Suppe, Carnegie Mellon University

**TO LEARN MORE:** Visit CMU’s NavLab at http://www.ri.cmu.edu/~navlab or www.qolt.org

---

**Quality of Life Technology Center**
a National Science Foundation Engineering Research Center

**Carnegie Mellon University** **University of Pittsburgh**