immersion

Building advanced haptic experiences for automotive HMI

A Haptic System Design for Automotive Touch Surfaces

Enabling automotive suppliers to build high-quality haptic experiences and create intuitive, natural, touch responsive user interfaces for the car

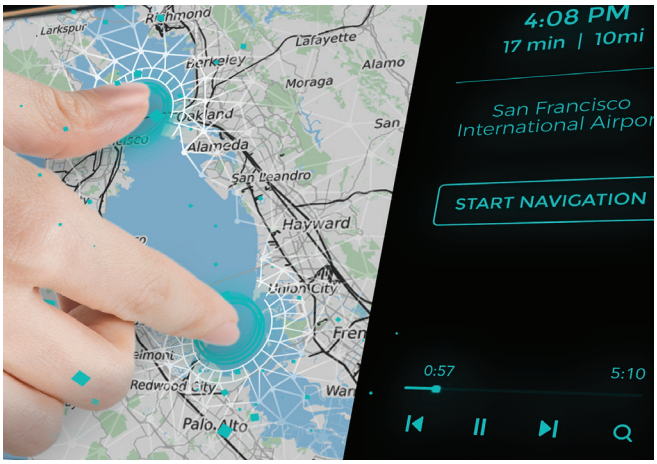
Immersion's haptic system design provides automotive suppliers with the guidance needed to quickly go-to-market with an advanced haptic system for future in-car HMI experiences.

Using advanced linear resonant actuator (LRA) technology, Immersion's new haptic system design delivers higher fidelity, improved efficiency, and greater strength in a smaller form factor compared to the haptic systems in today's automobiles.

These new capabilities enable ultra-crisp responsive touch experiences in touchscreens and control surfaces for navigation, climate control, media/infotainment and button replacement.

With improved performance in haptics, the new haptic system design can be used to replace mechanical buttons and dials in the center stack console and throughout the vehicle to enable automotive OEMs to fully leverage their programmable touchscreens for car system controls. The quality of the haptics provides a touch-responsive experience that feels natural to users, similar to the haptic experience in smartphones.

The core of Immersion's haptic system design is Immersion's Active Sensing™ technology, a smart algorithm and mechanical system design that enables



ICs to read and react to a sensor. The result is more precise control of the actuator, a higher frequency range, faster reaction times for quick starts and stop, and lower noise levels than other currently available haptic systems.

The use of touch surfaces in the car is increasing. Haptic technology enables intuitive, natural, cleanly designed user interfaces for navigating and interacting with touchscreens and touchpads. Immersion's haptic system design provides automotive suppliers with what they need to win business from automotive OEMs for high-quality haptic systems with advanced capabilities.

Immersion's Haptic System Design for Automotive Touch Surfaces

is a thoughtfully created reference guide complemented with certified haptic hardware components selection guides, haptic design tools, sample haptic effect designs, automotive use cases, relevant technology application notes, and support from Immersion's haptic experts and partners in one solution.

Benefits

For Automotive OEMs and Brands

- Innovative user experience with better product performance, intuitive UI design, and integration of advanced technology
- Ability to expand use of reactive touch interactions with powerful, yet smaller haptic system form factor
- Multimodal touch experiences similar to consumer experiences in smartphones, gaming, and wearables
- Realistic replication of mechanical buttons, dials, and sliders with high-definition haptics and distinct tactile effects

For Automotive System Suppliers

- Quickly go to market with high-quality haptic system design using commodity components
- Optimize system performance and increase haptic quality and consistency
- Innovative use cases that inspire customer adoption, increasing value as an automotive OEM supplier
- Low-cost BOM and streamlined process for selecting haptic hardware

Features

Holistic Approach to Haptic System Design

Immersion's haptic system design is a holistic approach to improving performance by optimizing system design, haptic hardware, and effect design. Components work better together. Consumers enjoy a positive experience through better design.

Active Sensing Technology

This smart technology improves system performance and reduces component variance creating experience consistency from one haptic system to another. Reduced tail effects and noise result in a crisper tactile experience.

Performance-Driven Design Schematics

Effective haptics in automotive requires moving a mass while counteracting vehicle motion, so the haptic effect is distinctive enough to be felt by users. The system design supports proper configuration of the haptic components to produce haptic effects of sufficient magnitude and frequency in the expected response time.

Validation Testing

Testing the haptic system design validates haptic effect playback before finalizing for fabrication. The haptic system reference design outlines this process and testing parameters that ensure playback as intended.

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