Summary:

The first article, titled "Tactile Hand Motion and Pose Guidance for 3D Interaction" by Alexander Marquardt, discusses the development of a tactile display system for enhancing 3D interaction. The system renders the location of the contact centroid on the user's fingertip, providing concurrent feedback of contact location and interaction forces. The compact design of the system, mounted on a haptic force-feedback device, allows for versatile object manipulation and richer haptic interactions. The author conducted perceptual experiments to evaluate the effectiveness of the display concept. The results showed that users could effectively perceive object curvature and distinguish between different interaction types using the device. The study highlights the importance of tactile feedback in dexterous manipulation and virtual reality applications.

The second article, titled "Contact Location Display for Haptic Perception of Curvature and Object Motion" by William R. Provancher, Mark R. Cutkosky, Katherine J. Kuchenbecker, and Günter Niemeyer, focuses on a new tactile display for dexterous telemanipulation and virtual reality. The authors present a device that renders the location of the contact centroid on the user's fingertip, enabling the perception of curvature and object motion. The device combines custom hardware with a standard haptic feedback device to provide simultaneous feedback of contact location and force. Two perceptual experiments were conducted to evaluate the device. The first experiment involved distinguishing between object curvatures in real and virtual interactions, showing similar levels of discrimination in both cases. The second experiment investigated virtual interaction with rolling and anchored objects, demonstrating users' ability to distinguish between interaction types using the device. The study suggests that even a simple display of the contact centroid location can significantly enhance teleoperational tasks and virtual grasping.

Both articles highlight the importance of tactile feedback in enhancing human perception and interaction with virtual and physical objects. The tactile display systems described in the articles offer a means to provide users with real-time information about contact location and interaction forces, leading to more realistic and immersive experiences. The experiments conducted in both studies demonstrate the effectiveness of the devices in enabling users to perceive object properties and distinguish between different types of interactions. The findings contribute to the understanding of human perception and provide insights for the design of more advanced haptic interfaces in various fields, including robotics, telemanipulation, and virtual reality.

In summary, these articles present innovative approaches to tactile display systems that enhance 3D interaction, dexterous manipulation, and virtual reality experiences. By providing users with tactile feedback of contact location and forces, these systems improve object perception and enable more realistic and immersive interactions. The findings from the perceptual experiments conducted in both studies validate the effectiveness of the devices in conveying important tactile information to users. These advancements contribute to the field of haptics and have implications for various applications, including robotics, teleoperation, and virtual environments.