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ADVANCEMENTS IN HAPTIC TECHNOLOGY

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Abstract: Haptic technology, commonly known ashaptics, makes advantage of the tactile sense of the user by applying stresses, motions, and also vibrations. Mechanical stimulation can help with remote control of equipment and devices, the production of virtual things that only exist in computer simulations, and many other tasks. Haptic has been likened to "what computer graphics does forvision does for the sense of touch." It's critical to distinguish between tactile sensors, which detect the force that a user approaches an interface, and hapticdevices, which can measure the reactionary forces applied by the user.

Keywords: Tactile, Haptic Rendering, Haptic Perception, Virtual Object Creation and Control, and Sense of Touch

REFERENCES

- [1]. Mohan Pujary, Dr. Vishal C, Haptic Technology: A comprehensive review on its applications and future prospects IJRSET, Vol.10, Issue 11, July 2022.
- [2]. Sun, X.; Andersson, K.; Sellgren, U. Towards a Methodology for Multidisciplinary Design Optimization of Haptic Devices. In Proceedings of the ASME 2015 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, Boston, MA, USA, 2–5 August 2015.
- [3]. Sutherland, G.R.; Maddahi, Y.; Gan, L.S.; Lama, S.;Zareinia, K. Robotics in the neurosurgical treatment of glioma. Surg. Neurol. Int. 2015.
- [4]. Fayez, R., Mohamad Eid, Mauricio Orozco, and Abdulmotaleb El Saddik Haptic applications metalanguage In 2006 Tenth IEEE International Symposium on Distributed Simulation and Real-Time Applications, pp. 261-264. IEEE, 2006.
- [5]. Bordegoni, Monica, Giorgio Colombo, and Luca Formentini Haptic technologies for the conceptual and validation phases of product design Computers & Graphics 30, no. 3, 2019
- [6]. Hamza-Lup, F. G., Bergeron, K., & Newton, D.Haptic systems in user interfaces: state of the art survey. In Proceedings of the 2019 ACM Southeast Conference.2019.
- [7]. Cedriss Saint-Louis, Abdelwahab Hamam, Survey of Haptic Technology and Entertainment Applications, SoutheastCon 2021, pp.01-07, 2021.
- [8]. Fei Wang, Zhiqin Qian, Yingzi Lin, Wenjun Zhang, Design and Rapid Construction of a Cost-Effective Virtual Haptic Device, IEEE/ASME Transactions on Mechatronics, vol.26, no.1, pp.66-77, 2021.
- [9]. Kyohei Toyoshima, Tetsuya Oda, Tomoya Yasunaga, Chihiro Yukawa, Yuki Nagai, Nobuki Saito, Leonard Barolli, Design and Implementation of a Haptics Based Soldering Education System, Innovative Mobile and Internet Services in Ubiquitous Computing, vol.496, pp.54, 2022.
- [10]. Lu Jiu-ru, Hang Lu-bin, Huang Xiao-bo et al., Application technology of force feedback interaction system based on virtual reality, Light machinery, vol. 34,no. 2, pp. 98-102, 2016.
- [11]. Pinzon David, Byrns Simon and Zheng Bin, Prevailing Trends in Haptic Feedback Simulation for Minimally Invasive Surgery, Surgical Innovation, vol. 23, no. S1553–3506, pp. 415-421, 2016.
- [12]. Minogue James and Borland David, Investigating Students' Ideas About Buoyancy and the Influence of Haptic Feedback, J Sci Educ Technol, vol. 25, no. S1059–0145, pp. 187-202, 2016.
- [13]. Han Insook and B. Black John, Incorporating hapticfeedback in simulation for learning physics, Computers & Education, no. S0360–1315, pp. 281-2290, 2011.

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- [14]. Kessler JA, Lovelace RC and Okamura AM, A haptic system for educational games:design and applicationspecific kinematic optimization, AsmeDynamic Systems & Control Conference Palo Alto California USA, vol. 23, no. 1, 2013.
- [15]. Darrah Marjorie, Murphy Kristen, Speransky Kirill et al., Framework for K-12 Education Haptic Applications, Haptic Symposium Houston TX USA, pp.409-414, 2014.
- [16]. H. Culbertson, S. Schorr and A. Okamura, Haptics: The Present and Future of Artificial Touch Sensation, Annual Review of Control Robotics and Autonomous Systems, vol. 1, no. 1, pp. 385-409, 2018.
- [17]. P. Lopes, S. You, L.-P. Cheng, S. Marwecki and P.Baudisch, Providing Haptics to Walls & Heavy Objects in Virtual Reality by Means of Electrical Muscle Stimulation, Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, 2017.
- [18]. M. Auvray and C. Duriez, In Haptics: Neuroscience Devices Modeling and Applications 9th International Conference, Euro Haptics 2014 Versailles France June 24–26 2014 Proceedings Part I, pp. 466-468, 2014.
- [19]. Sakr, N.; Georganas, Nicolas D.; Jiying Zhao, "Human Perception-Based Data Reduction for Haptic Communication in Six-DoF Telepresence Systems", Instrumentation and Measurement, IEEE Transactions on, vol. 60, no. 11, pp. 3534, 3546, Nov. 2011.
- [20]. Wildenbeest, J. G. W.; Abbink, D. A.; Heemskerk, C. J. M.; Van Der Helm, F. C. T.; Boessenkool, H., "The Impact of Haptic Feedback Quality on the Performance of Teleoperated Assembly Tasks", Haptics, IEEE Transactions on, vol. 6, no. 2, pp. 242, 252, April-June 2013.

