Centre for Applied Creative Technologies

6. Surgery Simulation - VR and AR

Aguilera-Canon M.C., Wainwright T., Yang X., Nait-Charif H. 2019, Mixed Reality-Based Simulator for Training on Imageless Navigation Skills in Total Hip Replacement Procedures. In: El Rhalibi A., Pan Z., Jin H., Ding D., Navarro-Newball A., Wang Y. (eds) E-Learning and Games. Edutainment 2018. Lecture Notes in Computer Science, vol 11462. Springer, Cham

Zhang, J., Lyu, Y., Wang, Y., Nie, Y., Yang, X., Zhang, J. and Chang, J., 2018, December. Development of laparoscopic cholecystectomy simulator based on unity game engine. In *Proceedings of the 15th ACM SIGGRAPH European Conference on Visual Media Production* (pp. 1-9).

Qian, K., Bai, J., Yang, X., Pan, J. and Zhang, J., 2017. Essential techniques for laparoscopic surgery simulation. *Computer Animation and Virtual Worlds*, *28*(2), p.e1724.

Chen, L., Tang, W., John, N.W., Wan, T.R. and Zhang, J.J., 2017. Augmented reality for depth cues in monocular minimally invasive surgery. *arXiv preprint arXiv:1703.01243*.

Guo, S., Wang, M., Notman, G., Chang, J., Zhang, J. and Liao, M., 2017. Simulating collective transport of virtual ants. *Computer Animation and Virtual Worlds*, *28*(3-4), p.e1779.

Qian, K., Jiang, T., Wang, M., Yang, X. and Zhang, J., 2016. Energized soft tissue dissection in surgery simulation. Computer Animation and Virtual Worlds, 27 (3-4), 280-289.

Qian, K., Bai, J., Yang, X., Pan, J. and Zhang, J., 2016. Essential techniques for laparoscopic surgery simulation. Computer Animation and Virtual Worlds. 10.1002/cav.1724

Pan, J.J., Chang, J., Yang, X., Liang, H., Zhang, J.J., Qureshi, T., Howell, R. and Hickish, T., 2015. Virtual reality training and assessment in laparoscopic rectum surgery. *The International Journal of Medical Robotics and Computer Assisted Surgery*, *11*(2), pp.194-209.

Pan, J.J., Chang, J., Yang, X., Zhang, J.J., Qureshi, T., Howell, R. and Hickish, T., 2011. Graphic and haptic simulation system for virtual laparoscopic rectum surgery. *The International Journal of Medical Robotics and Computer Assisted Surgery*, *7*(3), pp.304-317.

7. Novel HCI

Deng, S., Chang, J., Hu, S.M. and Zhang, J.J., 2017, June. Gaze modulated disambiguation technique for gesture control in 3d virtual objects selection. In *2017 3rd IEEE International Conference on Cybernetics (CYBCONF)* (pp. 1-8). IEEE.

Deng, S., Chang, J., Kirkby, J.A. and Zhang, J.J., 2016. Gaze mouse coordinated movements and dependency with coordination demands in tracing. *Behaviour & Information Technology*, *35*(8), pp.665-679.

Liang, H., Chang, J., Kazmi, I.K., Zhang, J.J. and Jiao, P., 2015, September. Puppet Narrator: utilizing motion sensing technology in storytelling for young children. In *2015 7th International Conference on Games and Virtual Worlds for Serious Applications (VS-Games)* (pp. 1-8). IEEE.

Deng, S., Kirkby, J.A., Chang, J. and Zhang, J.J., 2014. Multimodality with eye tracking and haptics: a new horizon for serious games?. *International Journal of Serious Games*, *1*(4), pp.17-34.

8. Physically Based Animation and Simulation: Complex fluid dynamics, deformable objects modelling

Bian, S., Deng, Z., Chaudhry, E., You, L., Yang, X., Guo, L., Ugail, H., Jin, X., Xiao, Z. and Zhang, J.J., 2019. Efficient and realistic character animation through analytical physics-based skin deformation. Graphical Models, 104.

Lyu, Y., Zhang, J., Chang, J., Guo, S. and Zhang, J.J., 2019, June. Integrating Peridynamics with Material Point Method for Elastoplastic Material Modeling. In *Computer Graphics International Conference* (pp. 228-239). Springer, Cham.

Jiang, M., Southern, R. and Zhang, J.J., 2018. Energy-based dissolution simulation using SPH sampling. *Computer Animation and Virtual Worlds*, *29*(2), p.e1798.

Yang, T., Chang, J., Lin, M.C., Martin, R.R., Zhang, J.J. and Hu, S.M., 2017. A unified particle system framework for multi-phase, multi-material visual simulations. *ACM Transactions on Graphics (TOG)*, *36*(6), pp.1-13.

Yang, T., Martin, R.R., Lin, M.C., Chang, J. and Hu, S.M., 2017. Pairwise force SPH model for real-time multi-interaction applications. *IEEE transactions on visualization and computer graphics*, *23*(10), pp.2235-2247.

Yang, T., Chang, J., Ren, B., Lin, M.C., Zhang, J.J. and Hu, S.M., 2015. Fast multiple-fluid simulation using Helmholtz free energy. *ACM Transactions on Graphics (TOG)*, *34*(6), pp.1-11.

Jiang, M., Zhou, Y., Wang, R., Southern, R. and Zhang, J.J., 2015. Blue noise sampling using an SPH-based method. *ACM Transactions on Graphics (TOG)*, *34*(6), pp.1-11.

Qian, K., Yang, X., Zhang, J. and Wang, M., 2015, August. An adaptive spherical collision detection and resolution method for deformable object simulation. In *2015 14th International Conference on*