

Supporting material for the publication:

"HCI RESEARCH IN VIRTUAL REALITY: A DISCUSSION OF PROBLEM-SOLVING"

by C. Boletsis, J. E. Cedergren, and S. Kongsvik, In: Proceedings of IADIS International Conference Interfaces and Human Computer Interaction 2017, IADIS Press.

- The 68 publications were retrieved from the Scopus.com database.
- Query string: (AUTHKEY("virtual reality") AND AUTHKEY("human computer interaction")) AND (LIMIT-TO(PUBYEAR,2016) OR LIMIT-TO(PUBYEAR,2015) OR LIMIT-TO(PUBYEAR,2014))
- The search took place between February 22nd – 24th, 2017.
- The number of retrieved documents is subject to change over time, depending on the number of online-first, published articles that are printed at a later date and the number of withdrawn publications.
- The number of archived publications may change over time.

Nr.	Publications	Types of Research Problems			Accessibility		Remarks
		Empirical	Conceptual	Constructive	Open access	Archived	
1.	Canessa, A., Chessa, M., Gibaldi, A., Sabatini, S.P., Solari, F. Calibrated depth and color cameras for accurate 3D interaction in a stereoscopic augmented reality environment (2014) Journal of Visual Communication and Image Representation, 25 (1), pp. 227-237. DOI: 10.1016/j.jvcir.2013.02.011						Irrelevant: it examines Augmented Reality
2.	Adams, R.J., Lichter, M.D., Krepkovich, E.T., Ellington, A., White, M., Diamond, P.T. Assessing Upper Extremity Motor Function in Practice of Virtual Activities of Daily Living (2015) IEEE Transactions on Neural Systems and Rehabilitation Engineering, 23 (2), art. no. 6909063, pp. 287-296. DOI: 10.1109/TNSRE.2014.2360149	✓		✓	✓		
3.	Bridgeman, B., Blaesi, S., Campusano, R. Optical correction reduces simulator sickness in a driving environment (2014) Human Factors, 56 (8), pp. 1472-1481. DOI: 10.1177/0018720814533992	✓		✓			
4.	Muhanna, M.A. Virtual reality and the CAVE: Taxonomy, interaction challenges and research directions (2015) Journal of King Saud University Computer and Information Sciences, 27 (3), pp. 344-361. DOI: 10.1016/j.jksuci.2014.03.023		✓		✓		
5.	Xu, C.B., Zhou, M.Q., Shen, J.C., Luo, Y.L., Wu, Z.K. A Leap Motion based intuitive volume interaction technology (2015) Dianzi Yu Xinxi Xuebao/Journal of Electronics and Information Technology, 37 (2), pp. 353-359. DOI: 10.11999/JEIT140370						Irrelevant: written in a non-English language
6.	Vélaz, Y., LozanoRodero, A., Suescun, A., Gutiérrez, T. Natural and hybrid bimanual interaction for virtual assembly tasks (2014) Virtual Reality, 18 (3), pp. 161-171. DOI: 10.1007/s10055-013-0240-y	✓		✓			
7.	Heyselaar, E., Hagoort, P., Segaert, K. In dialogue with an avatar, language behavior is identical to dialogue with a human partner (2015) Behavior Research Methods, pp. 115. Article in Press. DOI: 10.3758/s13428-015-0688-7	✓	✓		✓		
8.	Stowers, J.R., Fuhrmann, A., Hofbauer, M., Streinzer, M., Schmid, A., Dickinson, M.H., Straw, A.D. Reverse engineering animal vision with virtual reality and genetics (2014) Computer, 47 (7), art. no. 6861928, pp. 38-45. DOI: 10.1109/MC.2014.190			✓		✓	
9.	Khundam, C. First person movement control with palm normal and hand gesture interaction in virtual reality (2015) Proceedings of the 2015 12th International Joint Conference on Computer Science and Software Engineering, JCSSE 2015, art. no. 7219818, pp. 325-330. DOI: 10.1109/JCSSE.2015.7219818			✓		✓	
10.	Prasad, S., Kumar, P., Sinha, K.P. A wireless dynamic gesture user interface for HCI using hand data glove (2014) 2014 7th International Conference on Contemporary Computing, IC3 2014, art. no. 6897148, pp. 62-67. DOI: 10.1109/IC3.2014.6897148			✓			
11.	Pavlik, R.A., Vance, J.M. Interacting with Grasped Objects in Expanded Haptic Workspaces Using the Bubble Technique (2015) Journal of Computing and Information Science in Engineering, 15 (4), art. no. 041006. DOI: 10.1115/1.4031826			✓		✓	

12.	Ip, H.H.S., Li, C. Virtual reality-based learning environments: Recent developments and ongoing challenges (2015) Lecture Notes in Computer Science, 9167, pp. 314. DOI: 10.1007/978-3-319-20621-9_1		✓				
13.	Tartarisco, G., Carbonaro, N., Tonacci, A., Bernava, G.M., Arnao, A., Crifaci, G., Cipresso, P., Riva, G., Gaggioli, A., De Rossi, D., Tognetti, A., Pioggia, G. Neurofuzzy physiological computing to assess stress levels in virtual reality therapy (2015) Interacting with Computers, 27 (5), pp. 521-533. DOI: 10.1093/iwc/iwv010	✓		✓		✓	
14.	Kapoor, S., Arora, P., Kapoor, V., Jayachandran, M., Tiwari, M. Haptics - Touchfeedback technology widening the horizon of medicine (2014) Journal of Clinical and Diagnostic Research, 8 (3), pp. 294-299. DOI: 10.7860/JCDR/2014/7814.4191		✓			✓	
15.	Kyan, M., Sun, G., Li, H., Zhong, L., Muneesawang, P., Dong, N., Elder, B., Guan, L. An approach to ballet dance training through MS kinect and visualization in a CAVE virtual reality environment (2015) ACM Transactions on Intelligent Systems and Technology, 6 (2), art. no. 23. DOI: 10.1145/2735951	✓		✓		✓	
16.	Arisandi, R., Otsuki, M., Kimura, A., Shibata, F., Tamura, H. Virtual handcrafting: Building virtual wood models using tooldevice (2014) Proceedings of the IEEE, 102 (2), art. no. 6701359, pp. 185-195. DOI: 10.1109/JPROC.2013.2294243			✓		✓	
17.	Lugmayr, A., Sutinen, E., Suhonen, J., Sedano, C.I., Hlavacs, H., Montero, C.S. Serious storytelling – a first definition and review (2016) Multimedia Tools and Applications, pp. 127. Article in Press. DOI: 10.1007/s11042-016-3865-5		✓			✓	
18.	Dorta, T., Kinayoglu, G., Hoffmann, M. Hyve3D and the 3D Cursor: Architectural co-design with freedom in virtual reality (2016) International Journal of Architectural Computing, 14 (2), pp. 87-102. DOI: 10.1177/1478077116638921	✓		✓		✓	
19.	Endo, T., Kawasaki, H. A fine motor skill training system using multi-fingered haptic interface robot (2015) International Journal of Human Computer Studies, 84, pp. 41-50. DOI: 10.1016/j.ijhcs.2015.08.006	✓		✓			
20.	Chessa, M., Garibotti, M., Maiello, G., Caroggio, L., Huang, H., Sabatini, S., Solari, F. Detection of 3D position of eyes through a consumer RGB-D camera for stereoscopic mixed reality environments (2015) 2014 International Conference on 3D Imaging, IC3D 2014 Proceedings, art. no. 7032592. DOI: 10.1109/IC3D.2014.7032592	✓		✓			
21.	Corrêa, C.G., De Lourdes Dos Santos Nunes, F., Tori, R. Virtual reality-based system for training in dental anesthesia (2014) Lecture Notes in Computer Science, 8526 LNCS (PART 2), pp. 267-276. DOI: 10.1007/978-3-319-07464-1_25	✓		✓			
22.	Zhang, Q.F., Sun, J.B., Sun, C.Q., Shi, C.J. Marine engine simulation system for crew operation examination based on virtual reality (2014) Applied Mechanics and Materials, 441, pp. 465-469. DOI: 10.4028/www.scientific.net/AMM.441.465			✓			
23.	Sun, F.J., Chen, H., Liu, H.J. Research of visualized 3D substation simulation based on virtual reality technology (2014) Applied Mechanics and Materials, 568570, pp. 1834-1838. DOI: 10.4028/www.scientific.net/AMM.568-570.1834			✓			
24.	Dias, M.S., Eloy, S., Carreiro, M., Proença, P., Moural, A., Pedro, T., Freitas, J., Vilar, E., D'Alpuim, J., Azevedo, A.S. Designing better spaces for people (2014) Rethinking Comprehensive Design: Speculative Counterculture Proceedings of the 19th International Conference on Computer-Aided Architectural Design Research in Asia, CAADRIA 2014, pp. 739-748.	✓		✓		✓	
25.	Clemente, M., Rey, B., Rodríguez-Pujadas, A., Barros-Loscertales, A., Baños, R.M., Botella, C., Alcañiz, M., Ávila, C. An fMRI study to analyze neural correlates of presence during virtual reality experiences (2014) Interacting with Computers, 26 (3), pp. 269-284. DOI: 10.1093/iwc/iwt037	✓				✓	

26.	Jofre, L.N., Rodriguez, G.B., Alvarado, Y.M., Fernandez, J.M., Guerrero, R.A. Non-verbal communication interface using a data glove (2016) CACIDI 2016 - Congreso Argentino de Ciencias de la Informatica y Desarrollos de Investigacion, art. no. 7786008. DOI: 10.1109/CACIDI.2016.7786008	✓		✓			
27.	Castro, R.H.A.D., Santos, F.G.D., Fonseca, I.E.D., Tavares, T.A. ATreVEE IN: Using natural interaction in procedure simulator for training in the electricity sector (2016) Brazilian Symposium on Games and Digital Entertainment, SBGAMES, art. no. 7785855, pp. 183-191. DOI: 10.1109/SBGAMES.2015.14			✓			
28.	Pike, M., Ch'ng, E. Evaluating Virtual Reality experience and performance: A brain based approach (2016) Proceedings VRCAI 2016: 15th ACM SIGGRAPH Conference on Virtual-Reality Continuum and Its Applications in Industry, 1, pp. 469-474. DOI: 10.1145/3013971.3014012		✓			✓	
29.	Turner, C.J., Hutabarat, W., Oyekan, J., Tiwari, A. Discrete Event Simulation and Virtual Reality Use in Industry: New Opportunities and Future Trends (2016) IEEE Transactions on Human-Machine Systems, 46 (6), art. no. 7547285, pp. 882-894. DOI: 10.1109/THMS.2016.2596099		✓			✓	
30.	Harman, J., Brown, R., Johnson, D. The role of immersion during situated memory recall within virtual worlds (2016) Proceedings of the 28th Australian Computer-Human Interaction Conference, OzCHI 2016, pp. 110. DOI: 10.1145/3010915.3010945	✓		✓		✓	
31.	Rehm, I.C., Foenander, E., Wallace, K., Abbott, J.A. M., Kyrios, M., Thomas, N. What role can avatars play in e-mental health interventions? Exploring new models of client-therapist interaction (2016) Frontiers in Psychiatry, 7 (NOV), art. no. 186. DOI: 10.3389/fpsyt.2016.00186		✓			✓	
32.	Kumar, D., Sharma, A. Electrooculogram-based virtual reality game control using blink detection and gaze calibration (2016) 2016 International Conference on Advances in Computing, Communications and Informatics, art. no. 7732407, pp. 2358-2362. DOI: 10.1109/ICACCI.2016.7732407	✓		✓			
33.	Bottone, M., Johnsen, K. Improving interaction in HMD-based vehicle simulators through real time object reconstruction (2016) SUI 2016 Proceedings of the 2016 Symposium on Spatial User Interaction, pp. 111-120. DOI: 10.1145/2983310.2985761	✓		✓			
34.	Bozgeyikli, E., Raij, A., Katkooori, S., Dubey, R. Locomotion in Virtual reality for individuals with autism spectrum disorder (2016) SUI 2016 Proceedings of the 2016 Symposium on Spatial User Interaction, pp. 33-42. DOI: 10.1145/2983310.2985763	✓					
35.	Shrestha, S., Mohamed, M.A., Chakraborty, J. A comparative pilot study of historical artifacts in a CAVE automatic virtual reality environment versus paper-based artifacts (2016) Proceedings of the 18th International Conference on Human-Computer Interaction with Mobile Devices and Services Adjunct, MobileHCI 2016, pp. 968-977. DOI: 10.1145/2957265.2962644	✓		✓			
36.	Wang, W., Singh, K.P., Chu, Y.T., Huber, A. Educating bicycle safety and fostering empathy for cyclists with an affordable and game-based VR app (2016) Proceedings of the 18th International Conference on Human-Computer Interaction with Mobile Devices and Services Adjunct, MobileHCI 2016, pp. 883-890. DOI: 10.1145/2957265.2961846			✓			
37.	Li, X., Zhang, Z., Liang, F., Gao, Q., Tan, L. Natural human-computer interaction control of multi operators in collaborative virtual maintenance based on optical human motion capture system (2016) International Journal of Modeling, Simulation, and Scientific Computing, 7 (2), art. no. 1650002. DOI: 10.1142/S1793962316500021			✓			
38.	Wang, D., Jiao, J., Zhang, Y., Zhao, X. Computer haptics: Haptic modeling and rendering in virtual reality environments (2016) Jisuanji Fuzhu Sheji Yu Tuxingxue Xuebao/Journal of Computer-Aided Design and Computer Graphics, 28 (6), pp. 881-895.						Irrelevant: written in a non-English language
39.	Byrd, G. Home Sweet Mind-Controlled Home (2016) Computer, 49 (5), art. no. 7470001, pp. 98-101. DOI: 10.1109/MC.2016.140			✓			

40.	Jones, J.A., Edewaard, D., Tyrrell, R.A., Hodges, L.F. A schematic eye for virtual environments (2016) 2016 IEEE Symposium on 3D User Interfaces, 3DUI 2016 Proceedings, art. no. 7460055, pp. 221-230. DOI: 10.1109/3DUI.2016.7460055	✓	✓	✓		✓	
41.	McCormack, J., Prine, J., Trowbridge, B., Rodriguez, A.C., Integlia, R. 2D LIDAR as a distributed interaction tool for virtual and augmented reality video games (2016) 2015 IEEE Games Entertainment Media Conference, GEM 2015, art. no. 7377221. DOI: 10.1109/GEM.2015.7377221			✓			
42.	Wozniak, P., Vauderwange, O., Mandal, A., Javahiraly, N., Curticapean, D. Possible applications of the LEAP motion controller for more interactive simulated experiments in augmented or virtual reality (2016) Proceedings of SPIE - The International Society for Optical Engineering, 9946, art. no. 99460P. DOI: 10.1117/12.2237673		✓				
43.	Bennett, C.R., Corey, R.R., Giudice, U., Giudice, N.A. Immersive virtual reality simulation as a tool for aging and driving research (2016) Lecture Notes in Computer Science, 9755, pp. 377385. DOI: 10.1007/978-3-319-39949-2_36	✓		✓		✓	
44.	Chessa, M., Balocchi, G., Busi, M., Novellino, A., Solari, F. An oculus rift based exergame to improve awareness in disabled people (2016) VISIGRAPP 2016 Proceedings of the 11th Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications Doctoral Consortium, 4, pp. 770-777. DOI: 10.5220/0005852607700777			✓	✓		
45.	Nguyen, M.T., Nguyen, H.K., Vo-Lam, K.D., Nguyen, X.G., Tran, M.T. Applying virtual reality in city planning (2016) Lecture Notes in Computer Science, 9740, pp. 724-735. DOI: 10.1007/978-3-319-39907-2_69			✓			
46.	Bian, D., Wade, J., Warren, Z., Sarkar, N. Online engagement detection and task adaptation in a virtual reality based driving simulator for autism intervention (2016) Lecture Notes in Computer Science, 9739, pp. 538-547. DOI: 10.1007/978-3-319-40238-3_51			✓		✓	
47.	Ohl, S., Willert, M., Stadt, O. Latency in Distributed Acquisition and Rendering for Telepresence Systems (2015) IEEE Transactions on Visualization and Computer Graphics, 21 (12), art. no. 7050364, pp. 1442-1448. DOI: 10.1109/TVCG.2015.2407403			✓			
48.	Kayatt, P., Nakamura, R. Influence of a head-mounted display on user experience and performance in a virtual reality-based sports application (2015) Proceedings of the 7th Latin American Conference on Human Computer Interaction, CLIHC 2015, art. no. 2824895. DOI: 10.1145/2824893.2824895	✓					
49.	Morse, P., Reading, A., Lueg, C., Kenderdine, S. TaggerVR: Interactive Data Analytics for Geoscience - A Novel Interface for Interactive Visual Analytics of Large Geoscientific Datasets in Cloud Repositories (2015) 2015 Big Data Visual Analytics, BDVA 2015, art. no. 7314303. DOI: 10.1109/BDVA.2015.7314303			✓		✓	
50.	Chen, T.C., Chiu, C.F., Klimenko, A., Shih, T.K. [UMEDIA] [2] Toward a Holodeck like edutainment game using wearable device and motion sensors (2015) 2015 8th International Conference on Ubi-Media Computing, art. no. 7297462, pp. 242-247. DOI: 10.1109/UMEDIA.2015.7297462			✓			
51.	Heng, S., Yunfeng, D. Research on Cooperative Control of Human-Computer Interaction Tools with High Recognition Rate Based on Neural Network (2015) Proceedings of International Conference on Virtual Reality and Visualization, ICVRV 2014, art. no. 7281091, pp. 350-354. DOI: 10.1109/ICVRV.2014.6			✓			
52.	Islam, S., Gadea, C., Ionescu, B., Ionescu, D. A sensor array system for the estimation of 3D body and parts movements (2015) SACI 2015 10 th Jubilee IEEE International Symposium on Applied Computational Intelligence and Informatics, art. no. 7208184, pp. 125-130. DOI: 10.1109/SACI.2015.7208184			✓			
53.	Shemesh, A., Bar, M., Grobman, Y.J. Space and human perception - Exploring our reaction to different geometries of spaces (2015) CAADRIA 2015 - 20 th International Conference on Computer-Aided Architectural Design Research in Asia: Emerging Experiences in the Past, Present and Future of Digital Architecture, pp. 541-550.	✓			✓		

54.	Lin, C.J. Ergonomics design requirements of human interaction with virtual display through smart glasses (2015) New Ergonomics Perspective - Selected Papers of the 10th Pan-Pacific Conference on Ergonomics, pp. 273-277.		✓				
55.	Covarrubias, M., Mansutti, A., Bordegoni, M., Cugini, U. Flexible touch sensor for evaluating geometric properties of virtual shapes through sound (2015) Virtual and Physical Prototyping, 10 (2), pp. 77-89. DOI: 10.1080/17452759.2015.1046036	✓		✓			
56.	França, A.C.P.D., Soares, M.M. Dialogical Self on Virtual Reality Systems: Presence and Embodiment in Human Situated Interaction (2015) Procedia Manufacturing, 3, pp. 6444-6450. DOI: 10.1016/j.promfg.2015.07.923		✓		✓		
57.	Nikodem, J., Klempous, R. Novel force feedback interface for improving human perception in laparoscopic surgical trainer (2015) Simulation Series, 47 (5), pp. 41-46.			✓		✓	
58.	Holte, M.B., Gao, Y., Brooks, E.P. The virtual dressing room: A usability and user experience study (2015) Lecture Notes in Computer, 9179, pp. 429-437. DOI: 10.1007/978-3-319-21067-4_44	✓		✓			
59.	Rouillard, J., Duprès, A., Cabestaing, F., Bekaert, M.H., Piau, C., Coat, C., Vannobel, J.M., Lecocq, C. Relevant HCI for hybrid BCI and severely impaired patients (2015) Lecture Notes in Computer Science, 9183, pp. 313323. DOI: 10.1007/978-3-319-20816-9_30	✓		✓		✓	
60.	Fechter, M., Damgrave, R.G.J., Wartzack, S. Interactive immersive engineering system for distant collaboration (2015) Proceedings of the International Conference on Engineering Design, ICED, 6 (DS 8006), pp. 297-306.			✓			
61.	Stanković, S. Virtual reality and virtual environments in 10 lectures (2015) Synthesis Lectures on Image, Video, and Multimedia Processing, 19, pp. 1-197.						Irrelevant: book about teaching a VR course
62.	Kobayashi, D., Sakamoto, R., Nomura, Y. Motion lecture annotation system to learn Naginata performances (2014) Proceedings of SPIE - The International Society for Optical Engineering, 9025, art. no. 90250F. DOI: 10.1117/12.2041630			✓			
63.	Xu, Y.X., Zhu, X.A. The research and application of Data Glove in virtual interaction system (2014) Advanced Materials Research, 989-994, pp. 2057-2061. DOI: 10.4028/www.scientific.net/AMR.989-994.2057			✓			
64.	Xu, C., Zhang, J.R., Chen, B., Xie, T. Robot teleoperation system based on web and Kinect (2014) Advanced Materials Research, 1006-1007, pp. 618-622. DOI: 10.4028/www.scientific.net/AMR.1006-1007.618			✓			
65.	Oswald, P., Tost, J., Wettach, R. The real augmented reality: Real-time game editor in a spatial augmented environment (2014) ACM International Conference Proceeding Series, 2014-November, art. no. 2663853. DOI: 10.1145/2663806.2663853						Irrelevant: it examines Augmented Reality
66.	Huang, Y.C., Han, S.R. An Immersive Virtual Reality Museum via Second Life: Extending Art Appreciation from 2D to 3D (2014) Communications in Computer and Information Science, 434 PART I, pp. 579-584. DOI: 10.1007/978-3-319-07857-1_102			✓		✓	
67.	Zhao, L., Zhao, J., Qian, K., Lü, Y., Ding, H., Zhang, L. Research on key technology of new man-computer interface for dispatching automation system (2014) Dianwang Jishu/Power System Technology, 38 (11), pp. 3193-3198. DOI: 10.13335/j.1000-3673.pst.2014.11.038						Irrelevant: written in a non-English language
68.	Mohd Muhaiyuddin, N.D., Awang Rambli, D.R. Navigation in image-based Virtual Reality as the factor to elicit spatial presence experience (2014) ISTMET 1 st International Symposium on Technology Management and Emerging Technologies, art. no. 6936532, pp. 349-354. DOI: 10.1109/ISTMET.2014.6936532	✓		✓			