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REFERENCES

- [1] K. Bina and N. Moghadas, “BIM-ABM simulation for emergency evacuation from conference hall, considering gender segregation and architectural design,” *Architectural Engineering and Design Management*, May 2020, doi: 10.1080/17452007.2020.1761282.
- [2] R. Tomar, “Emergency Evacuation Software Model for Simulation Of Physical Changes Physical Change,” Ontario, 2019.
- [3] E. Kuligowski, “Evacuation decision-making and behavior in wildfires: Past research, current challenges and a future research agenda,” *Fire Safety Journal*, pp. 103129–103138, May 2020, doi: 10.1016/j.firesaf.2020.103129.
- [4] N. A. Abdul Aziz, R. M. Nordin, Z. Ismail, J. Yunus, and N. Hashim, “Dwelling Fire Safety Evacuation (DFSE): A Conceptual Approach,” *MATEC Web of Conferences*, vol. 266, Feb. 2019, doi: 10.1051/mateconf/201926605004.
- [5] G. Hofinger, R. Zinke, and L. Künzer, “Human Factors in Evacuation Simulation, Planning, and Guidance,” *Transportation Research Procedia*, vol. 2, 2014, doi: 10.1016/j.trpro.2014.09.101.
- [6] C. Şahin, J. Rokne, and R. Alhajj, “Human behavior modeling for simulating evacuation of buildings during emergencies,” *Physica A: Statistical Mechanics and its Applications*, vol. 528, pp. 121432–121444, 2019, doi: 10.1016/j.physa.2019.121432.
- [7] T. Ting Liu Zhen Liu Minhua Ma Rongrong Xuan Tian Chen Tao Lu Lipeng Yu, “An Information Perception-Based Emotion Contagion Model for Fire Evacuation,” *3D Research*, vol. 8, 2017, doi: 10.1007/s13319-017-0120-4.
- [8] M. Cabanac, “What is emotion?,” *Behavioural Processes*, vol. 60, no. 2, Nov. 2002, doi: 10.1016/S0376-6357(02)00078-5.
- [9] G. Marreiros, R. Santos, C. Ramos, and J. Neves, “Context-aware emotion-based model for group decision making,” *IEEE Intelligent Systems*, vol. 25, no. 2, pp. 31–39, 2010, doi: 10.1109/MIS.2010.46.
- [10] P. Sarshar, J. Radianti, and J. J. Gonzalez, “Modeling panic in ship fire evacuation using dynamic Bayesian network,” *2013 3rd International Conference on Innovative Computing Technology, INTECH 2013*, pp. 301–307, 2013, doi: 10.1109/INTECH.2013.6653668.
- [11] H. Faroqi and M. S. Mesgari, “Agent-based crowd simulation considering emotion contagion for emergency evacuation problem,” in *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences - ISPRS Archives*, 2015, vol. 40, no. 1W5, pp. 193–196. doi: 10.5194/isprsarchives-XL-1-W5-193-2015.
- [12] B. Liu, Z. Liu, D. Sun, and C. Bi, “An Evacuation Route Model of Crowd Based on Emotion and Geodesic,” *Mathematical Problems in Engineering*, vol. 2018, Oct. 2018, doi: 10.1155/2018/5397071.
- [13] X. H. Ta, B. Gaudou, D. Longin, and Tu. V. Ho, “Emotional Contagion Model for Group Evacuation Simulation,” *Informatica*, vol. 41, no. 2, pp. 169–182, 2017.
- [14] T. Liu, Z. Liu, M. Ma, T. Chen, C. Liu, and Y. Chai, “3D visual simulation of individual and crowd behavior in earthquake evacuation,” *Simulation: Transactions of the Society for Modeling and Simulation International*, vol. 95, no. 1, 2019, doi: 10.1177/0037549717753294.
- [15] W. Zakaria, U. K. Yusof, and S. Naim, “Modelling and Simulation of Crowd Evacuation with Cognitive Behaviour using Fuzzy Logic,” 2019.
- [16] Y. Mao, Z. Li, Y. Li, and W. He, “Emotion-based diversity crowd behavior simulation in public emergency,” *The Visual Computer*, vol. 35, no. 12, Dec. 2019, doi: 10.1007/s00371-018-1568-9.
- [17] G. Loh Chee Wyai, S. Keng Wai, C. Wai Shiang, and Muhammad Asyraf Bin Khairuddin, “Modelling Human Decision in Fire Evacuation Simulation through BDI Based Cognitive Architecture,” *Solid State Technology*, pp. 2766–2779, Feb. 2020, Accessed: Jan. 29, 2021. [Online]. Available: <http://solidstatetechnology.us/index.php/JSST/article/view/2030>
- [18] S. K. Wai, C. WaiShiang, M. A. bin Khairuddin, Y. R. B. Bujang, R. Hidayat, and C. H. Paschal, “Autonomous Agents in 3D Crowd Simulation Through BDI Architecture,” *JOIV : International Journal on Informatics Visualization*, vol. 5, no. 1, p. 1, Mar. 2021, doi: 10.30630/joiv.5.1.371.
- [19] Y. C. Ng, W. S. Cheah, K. W. Sim, M. A. bin Khairuddin, N. Bt Jali, and E. Ak Mit, “Developing fire evacuation simulation through BDI-based modelling and simulation,” *Journal of Physics: Conference Series*, vol. 2107, no. 1, Dec. 2021, doi: 10.1088/1742-6596/2107/1/012047.
- [20] H. Jiang, J. M. Vidal, and M. N. Huhns, “EBDI: An architecture for emotional agents,” in *Proceedings of the International Conference on Autonomous Agents*, 2007, pp. 38–40. doi: 10.1145/1329125.1329139.
- [21] Y. Mao, X. Du, Y. Li, and W. He, “An emotion based simulation framework for complex evacuation scenarios,” *Graphical Models*, vol. 102, Mar. 2019, doi: 10.1016/j.gmod.2019.01.001.
- [22] M. Cao, G. Zhang, M. Wang, D. Lu, and H. Liu, “A method of emotion contagion for crowd evacuation,” *Physica A: Statistical Mechanics and its Applications*, vol. 483, Oct. 2017, doi: 10.1016/j.physa.2017.04.137.
- [23] Y. Mao, S. Yang, Z. Li, and Y. Li, “Personality trait and group emotion contagion based crowd simulation for emergency evacuation,” *Multimedia Tools and Applications*, vol. 79, no. 5–6, pp. 3077–3104, Feb. 2020, doi: 10.1007/s11042-018-6069-3.
- [24] W. G. Parrott, *Emotions in social psychology: Essential readings*. Psychology Press, 2001.
- [25] I. Stamatopoulou, I. Sakellariou, and P. Kefalas, “Formal agent-based modelling and simulation of crowd behaviour in emergency evacuation plans,” in *Proceedings - International Conference on Tools with Artificial Intelligence, ICTAI, 2012*, vol. 1, pp. 1133–1138. doi: 10.1109/ICTAI.2012.161.
- [26] S. F. Zulkifli, C. W. Shiang, M. A. bin Khairuddin, and N. bt Jali, “Modeling emotion oriented approach through agent-oriented approach,” *International Journal on Advanced Science, Engineering and Information Technology*, vol. 10, no. 2, pp. 647–653, 2020, doi: 10.18517/IJASEIT.10.2.10644.
- [27] A. A. Lopez-Lorca, T. Miller, S. Pedell, L. Sterling, and M. Kissoon Curumsing, “Modelling Emotional Requirements.”
- [28] D. L. Robinson, “Brain function, emotional experience and personality,” *Netherlands Journal of Psychology*, vol. 64, no. 4, pp. 152–168, Dec. 2008, doi: 10.1007/bf03076418.
- [29] X. Zhan, L. Yang, K. Zhu, X. Kong, P. Rao, and T. Zhang, “Experimental study of the impact of personality traits on occupant exit choice during building evacuation,” *Procedia Engineering*, vol. 62, pp. 548–553, 2013, doi: 10.1016/J.PROENG.2013.08.099.
- [30] F. Durupinar, N. Pelechano, J. Allbeck, U. Güdükbay, and N. I. Badler, “How the ocean personality model affects the perception of crowds,” *IEEE Computer Graphics and Applications*, vol. 31, no. 3, pp. 22–31, 2011, doi: 10.1109/MCG.2009.105.