# A conceptual affective design framework for the use of emotions in computer game design

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**Appendix:**

Pool of all 52 papers (1995 – 2015) from Google Scholar using the terms emotion, affect computer games and/or videogames in the title, abstract or text.

| | Citation | Main Topic of Paper | Research Design | Application of Emotion Frameworks and Concepts |
|---|---|---|---|---|
| **1** | Aydt, H., Lees, M., Luo, L., Cai, W., Low, M. Y. H., & Kadirvelen, S. K. (2011) | An appraisal-based emotion engine for driving non-player character behavior. | SURVEY | NPC |
| **2** | Beskow, J., & Nordenberg, M. (2005) | Representing believable emotions on a non-player character's face. | DESC | NPC |
| **3** | Brown, C., Yannakakis, G. & Colton, S. (2012) | Experience-driven procedural music generation in computer games. | DESC | NARRATIVE |
| **4** | Collins, K. (2009) | A discussion on procedurally generated music in computer games. | DESC | INT |
| **5** | Collins, K., & Taillon, P. J. (2012) | Visualizing sound effects with on screen icons. | QUASI | INT |
| **6** | Collins, K., Kapralos, B., & Kanev, K. (2014) | The use of sound with large touch screens to evoke emotions in the user. | DESC | INT |
| **7** | Cunningham, S., Grout, V., & Picking, R. (2010) | The use of music and sound with player interactions to evoke emotions in computer games. | SURVEY | INT |
| **8** | de Peuter, A. (2014) | Adapting game parameters through ECG readings taken from the player. | QUASI | INT |
| **9** | Desurvire, H., & Wiberg, C. (2009) | Presents a list of heuristics that can be applied by game designers to create more engaging and replayable games. | QUASI | INT |
| **10** | Dickey, M. D. (2006) | Applying game narrative techniques to the development of learning environments. | DESC | AVATAR |
| **11** | Tomlinson, B., Downie, M., Berlin, M., Gray, J., Lyons, D., Cochran, J., & Blumberg, B. (2002) | Exploring emotional actions between the player and NPC | DESC | NPC |
| **12** | Drossos, K., Floros, A., & Kanellopoulos, N. G. (2012) | Sound effects in game interfaces evoke emotional responses in the player. | ANAL | INT |
| **13** | Dupire, J., Gal, V., & Topol, A. (2009) | Modelling player emotional states through gestural inputs in computer games. | DESC | INT |
| **14** | Fairclough, S. (2008) | Representing how physical and emotional data from the player is captured, analyzed | DESC | INT |

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| | | and used as game input. | | |
| **15** | Frome, J. (2006) | A presentation of theories explaining a players suspension of disbelief. | COMP | NARRATIVE |
| **16** | Garner, T., & Grimshaw, M. (2011) | Using sound to generate and significantly manipulate player fear in a game. | DESC | INT |
| **17** | Garner, T., Grimshaw, M., & Nabi, D. A. (2010) | An examination of sound parameters that elicit the most fear in players. | QUASI | INT |
| **18** | Gebhard, P., Schröder, M., Charfuelan, M., Endres, C., Kipp, M., Pammi, S., ... & Türk, O. (2008) | Real-time emotion generation in non-player characters. | ANAL | NPC |
| **19** | Gemrot, J., Kadlec, R., Bída, M., Burkert, O., Píbil, R., Havlíček, J., ... & Brom, C. (2009) | A framework for a believable non-player character with | ANAL | NPC |
| **20** | Gilroy, S. W., Cavazza, M., & Benayoun, M. (2009) | Mapping real-time emotional data to phenomenological models of user experience. | QUASI | INT |
| **21** | Grimshaw, M. (2009) | Exploring the concept of fear in horror games through the uncanny valley. | DESC | NPC |
| **22** | Hefner, D., Klimmt, C., & Vorderer, P. (2007) | A study of the effect emotional bonding between a player and avatar has on engagement. | RTC | AVATAR |
| **23** | Hoeberechts, M., & Shantz, J. (2009) | Real-time generation of background music in games that matches the emotional tone of the current scene. | ANAL | INT |
| **24** | Ip, B. (2011) | A discussion on the definitions and representations of game story and narrative. | DESC | NARRATIVE |
| **25** | Isbister, K., & DiMauro, C. (2011) | Evoking emotion in game players through engagement of peripheral devices. | ANAL | INT |
| **26** | Kasap, Z., & Magnenat-Thalmann, N. (2007) | A survey of virtual human architectures. | DESC | NPC |
| **27** | Kovács, G., Ruttkay, Z., & Fazekas, A. (2007) | Developing a virtual chess player with facial emotions. | ANAL | NPC |
| **28** | Kromand, D. (2007) | A discussion on open and closed avatar types in computer games. | QUAL | AVATAR |
| **29** | Laureano-Cruces, A. L., Acevedo-Moreno, D. A., Mora-Torres, M., & Ramírez-Rodríguez, J. (2012) | A non-player character capable of reacting emotionally toward a player's actions. | ANAL | NPC |
| **30** | Liljedahl, M. (2011) | How game affects a player psychologically emotionally and physiologically. | DESC | INT |
| **31** | Livingstone, S. R., & Brown, A. R. (2005) | Generating and adapting emotionally meaningful music in real-time. | COMP | INT |
| **32** | Mansilla, W. A. (2006) | The use of off-screen sounds in computer games to enhance the virtual environment. | RTC | NARRATIVE |
| **33** | Merkx, P. P. A. B., Truong, K. P., & Neerincx, M. A. (2007) | An illustration of how computer games can be used to illicit emotional responses. | SURVEY | INT |
| **34** | Ochs, M., Sabouret, N., & Corruble, V. (2008) | A non-player character driven by affective social relationships. | ANAL | NPC |
| **35** | Peña, L., Peña, J. M., & Ossowski, S. (2011) | Emotions in non-player characters represented by a continuous vector space. | ANAL | NPC |
| **36** | Popescu, A., Broekens, J., & van Someren, M. (2014) | A framework for generating non-player character behaviors based on emotional input. | ANAL | NPC |

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| **37** | Przybylski, A. K., Weinstein, N., Murayama, K., Lynch, M. F., & Ryan, R. M. (2011) | An examination of the intrinsic motivation found in computer games. | RTC | AVATAR |
| **38** | Sandercock, J., Padgham, L., & Zambetta, F. (2006) | Developing non-player characters that react to players and consider their own emotional states, experience and environment. | DESC | NPC |
| **39** | Schönbrodt, F. D., & Asendorpf, J. B. (2011) | Raising awareness of psychological frameworks for creating believable agents. | QUAL | NPC |
| **40** | Shilling, R., Zyda, M., & Wardynski, E. C. (2002) | Introducing emotions into military simulation games with sound. | QUASI | INT |
| **41** | Shinkle, E. (2008) | Emotions and sensing a 3D virtual space in real-time. | DESC | INT |
| **42** | Silva, D. R., Siebra, C. A., Valadares, J. L., Almeida, A. L., Frery, A. C., da Rocha Falcão, J., & Ramalho, G. L. (2000) | A stable personality model for long-term interaction with non-player characters. | ANAL | NPC |
| **43** | Takatalo, J., Häkkinen, J., Kaistinen, J., & Nyman, G. (2010) | Reveals the subcomponents of a games user experience that provide rich psychological experiences. | RTC | INT |
| **44** | Tinwell, A. (2009) | An investigation of the relationships between user satisfaction and perceived strangeness in non-player characters. | QUASI | NPC |
| **45** | Tinwell, A., Grimshaw, M., & Abdel-Nabi, D. (2011) | The effect of uncanny facial expressions on emotion believability in non-player characters. | QUASI | NPC |
| **46** | Tinwell, A., Grimshaw, M., Nabi, D. A., & Williams, A. (2011) | Recognition of facial expressions on non-player characters with respect to realness of characters appearance. | RTC | NPC |
| **47** | Tomlinson, B., & Blumberg, B. (2003) | Replicating social learning in virtual animals. | DESC | NPC |
| **48** | Truong, K. P., van Leeuwen, D. A., & Neerincx, M. A. (2007) | Discusses real-life emotion recognition applications. | RTC | INT |
| **49** | van Tol, R., & Huiberts, S. (2008) | A coherent framework for game audio that provides insight into structure and organization. | DESC | INT |
| **50** | Yun, C., Shastri, D., Pavlidis, I., & Deng, Z. (2009) | Improving a game players experience by adapting to their mood recognized by a webcam. | QUASI | INT |
| **51** | Zagalo, N., Torres, A., & Branco, V. (2006) | A methodology for implementing interactive sadness in virtual environments. | DESC | NARRATIVE |
| **52** | Zammitto, V., DiPaola, S., & Arya, A. (2008) | A multidimensional model for a non-player character that emphasizes interaction between movement and emotions. | DESC | NPC |