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Developing decision-making serious games using Ren'Py visual novel engine
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Abstract
Serious games are effective tools defined as games designed with a focus on explicit utility rather than the generally construed notion of games purely as a source of entertainment. Decision-making games are a type of serious game that can be developed with the intent of studying behavior, educating, appraising or other similar applications that benefit through the information collected from the decision-making process. Digital versions of serious games are gaining prominence due to a higher level of interactivity and complexity, especially in Human-Agent Interaction (HAI) applications. The development of digital serious games generally extends beyond software developers, typically involving individuals from diverse backgrounds who may not possess the necessary programming skills required for the development process. The paper proposed the use of Ren'Py, an open-source visual novel game engine as a platform to develop decision-making games. The study examined the Ren'Py game engine's potential through an assessment of the development process for the production of a decision-making serious game. Findings showed that Ren'Py satisfies the need for a relatively easy-to-develop platform for decision-making-based serious games due to its built-in systems that conform to currently applied serious decision-making game design principles.

Author Keywords
Decision-making game; Game development framework; Python-based scripting; Ren'Py game engine; Serious games

References

- Kara, N.
  A systematic review of the use of serious games in science education
  (2021) *Contemporary Educational Technology*, 13 (2).
  Jan

- Vaz de Carvalho, C., González González, C. S., Popescu, E., Rugelj, J.
  Editorial: serious games
  (2021) *Frontiers in Computer Science*, 3.
  May

- Braad, E., Žavcer, G., Sandovar, A.
  Processes and models for serious game design and development
  (2016) *Entertainment Computing and Serious Games*, pp. 92-118.

- Reynaldo, C., Christian, R., Hosea, H., Gunawan, A. A. S.
  Using video games to improve capabilities in decision making and cognitive skill: a literature review
  (2021) *Procedia Computer Science*, 179, pp. 211-221.

- Schoemaker, P. J. H., Russo, J. E.
  Decision-making
  (2014) *The Palgrave Encyclopedia of Strategic Management*,
  Palgrave Macmillan

- Turpin, S., Marais, M.
  Decision-making: theory and practice
  (2004) *ORiON*, 20 (2).
  Dec

- Hengen, K. M., Alpers, G. W.
  Stress makes the difference: social stress and social anxiety in decision-making under uncertainty
  (2021) *Frontiers in Psychology*, 12.
  Feb

- Zeelenberg, M., van Dijk, W. W., Manstead, A. S. R., vanr de Pligt, J.
  On bad decisions and disconfirmed expectancies: the psychology of regret and disappointment
  (2000) *Cognition & Emotion*, 14 (4), pp. 521-541.

- Ben Rebah, H., Ben slama, R.
  The educational effectiveness of serious games
  (2019) *Médiations et médiatisations*, (2), pp. 131-155.
  Nov

- Maheu-Cadotte, M.-A.
  Effectiveness of serious games and impact of design elements on engagement and educational outcomes in healthcare professionals and students: a systematic review and meta-analysis protocol
  (2018) *BMJ Open*, 8 (3).
  Mar

- Wu, J.-H., Du, J.-K., Lee, C.-Y.
  Development and questionnaire-based evaluation of virtual dental clinic: a serious game for training dental students
  (2021) *Medical Education Online*, 26 (1).
  Jan

- Schönbohm, A., Zhang, T. V.
  Evaluating the effectiveness of serious games in facilitating strategic decisions-making under COVID-19 crisis conditions
  (2022) *Journal of Work-Applied Management*, 14 (2), pp. 257-271.
  Oct

- Dallas, O., Gogoulou, A.
  Learning programming using Python: the case of the DigiWorld educational game
  (2022) *European Journal of Engineering and Technology Research*, pp. 1-8.
  Feb

- Smiderle, R., Rigo, S. J., Marques, L. B., Peçanha de Miranda Coelho, J. A., Jaques, P. A.
  The impact of gamification on students' learning, engagement and behavior based on their personality traits
  (2020) *Smart Learning Environments*, 7 (1).
  Dec

- Daylamani-Zad, D., Spyridonis, F., Al-Khafaaji, K.
  A framework and serious game for decision making in stressful situations; a fire evacuation scenario
  (2022) *International Journal of Human-Computer Studies*, 162.
  Jun

- Flogie, A., Aberšek, B., Kordigel Aberšek, M., Sik Lanyi, C., Pesek, I.
  Development and evaluation of intelligent serious games for children with learning difficulties: observational study
  (2020) *JMIR Serious Games*, 8 (2).
  Apr

- Engström, H., Backlund, P.
  Serious games design knowledge - experiences from a decade (+) of serious games development

(2021) *EAI Endorsed Transactions on Game-Based Learning*, May

- Berg Marklund, B., Engström, H., Hellkvist, M., Backlund, P.
What empirically based research tells us about game development
(2019) *The Computer Games Journal*, 8 (3-4), pp. 179-198.
Dec

- Aziz, R., Norman, H., Nordin, N., Wahid, F. N., Ibrahim, R.
Framework development of serious game-based instrument for malay language early literacy assessment
(2019) *Creative Education*, 10 (12), pp. 3235-3242.

- de Araujo Pistono, A. M. A., Santos, A. M. P., Baptista, R. J. V.
An initial framework for adaptive serious games based on a systematic literature review
(2022) *Communications in computer and information science*, pp. 43-51.

- Zulfikar, W. B., Ramdania, D. R., Afif, A., Uriawan, W.
A prototype of serious game for lecturing simulation
(2019) *Journal of Physics: Conference Series*, 1402 (6).
Dec

- Consalvo, M., Staines, D.
Reading Ren'Py: game engine affordances and design possibilities
(2021) *Games and Culture*, 16 (6), pp. 762-778.
Sep

- Sharif, K. H., Yousif Ameen, S.
Game engines evaluation for serious game development in education
(2021) *2021 International Conference on Software, Telecommunications and Computer Networks (SoftCOM)*, pp. 1-6.
Sep

- Perez-Colado, I. J., Calvo-Morata, A., Alonso-Fernandez, C., Freire, M., Martinez-Ortiz, I., Fernandez-Manjon, B.
Simva: simplifying the scientific validation of serious games
(2019) *2019 IEEE 19th International Conference on Advanced Learning Technologies (ICALT)*, pp. 113-115.
Jul

- Caserman, P.
Quality criteria for serious games: serious part, game part, and balance
(2020) *JMIR Serious Games*, 8 (3).
Jul

- Ávila-Pesántez, D., Rivera, L. A., Alban, M. S.
Approaches for serious game design: a systematic literature review
(2017) *Computers in education journal*, 8 (3).

- Hafizalshah, H.
Ren-PyShowcase
GitHub,
(accessed Dec. 05, 2022)

- Adisusilo, A. K., Soebandhi, S.
A review of immersivity in serious game with the purpose of learning media
(2021) *International Journal of Applied Science and Engineering*, 18 (5), pp. 1-11.

- Westera, W., Nadolski, R. J., Hummel, H. G. K., Wopereis, I. G. J. H.
Serious games for higher education: a framework for reducing design complexity

(2008) *Journal of Computer Assisted Learning*, 24 (5), pp. 420-432.
Oct

- Breien, F. S., Wasson, B.
Narrative categorization in digital game-based learning: engagement, motivation & learning
(2021) *British Journal of Educational Technology*, 52 (1), pp. 91-111.
Jan

- Gazis, A., Katsiri, E.
Serious games in digital gaming: a comprehensive review of applications, game engines and advancements
(2023) *WSEAS Transactions on Computer Research*, 11, pp. 10-22.
Mar

- Zainuddin, Z., Chu, S. K. W., Shujahat, M., Perera, C. J.
The impact of gamification on learning and instruction: a systematic review of empirical evidence
(2020) *Educational Research Review*, 30.
Jun

- Larson, K.
Serious games and gamification in the corporate training environment: a literature review
(2020) *TechTrends*, 64 (2), pp. 319-328.
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