DAC619 AE1 Report

Q12975371

James Johnson

2019

Contents

[Introduction 2](#_Toc24733876)

[Bibliography 3](#_Toc24733877)

[Appendices 4](#_Toc24733878)

# Introduction

The following document will serve to explain and contrast the differences between 3 AI algorithms and provide a final conclusion as to the selection of one of them and why.

# Finite State Machines

A state machine is a computational model which has existed long before the types of computers we use now and was in fact modelled and created by mathematicians in its earliest forms. (Verma, E. 2009) A state machine in game AI terms can be described as such:

*“A finite state machine is a device, or a model of a device, which has a finite number of states it can be in at any given time and can operate on input to either make transitions from one state to another or to cause an output or action to take place. A finite state machine can only be in one state at any moment in time.”* (Buckland, M. 2004)

A simpler way to think of this would be to abstract it out

# Behaviour Trees

H

# Goal Driven/Utility AI

H

# Conclusion

H

# Bibliography

Buttice, C. (2019). *Finite State Machine: How It Has Affected Your Gaming For Over 40 Years*. [online] Techopedia.com. Available at: https://www.techopedia.com/finite-state-machine-how-it-has-affected-your-gaming-for-over-40-years/2/33996 [Accessed 1 Dec. 2019].

Buckland, M. (2004). *AI game programming by example*. 2nd ed. Plano, Tex.: Wordware, pp.44-56.

Champandard, A. and Dunstan, P. (2013). Game AI Pro: The Behaviour Tree Starter Kit. Boca Raton: CRC Press, pp.73-91.

Day, J. (2016). *Game AI: Finite State Machines*. [online] Game Development. Available at: https://www.gamedevelopment.blog/game-ai-finite-state-machines/ [Accessed 1 Dec. 2019].

Graham, D. (2013). *Game AI pro: An Introduction to Utility Theory*. Boca Raton: CRC Press, pp.113-126.

Millington, I. and Funge, J. (2009). *Artificial Intelligence for Games*, 2nd ed. CRC Press, pp.125-155.

Russell, S. and Norvig, P. (2009). *Artificial intelligence: A Modern Approach*. Reading: MA: Prentice Hall, pp.480-509.

Verma, E. (2016). *Finite State machine : history definition Model example | Engineer's Portal.* [online] Er.yuvayana.org. Available at: https://er.yuvayana.org/finite-state-machine-history-definition-model-example/ [Accessed 1 Dec. 2019].

# Appendices

H

