As game developers a few years from now, we may look back at current generation AI with astonishment and possibly with a hint of nostalgia. We will notice the extreme simplicity of the systems and behaviours we created, asking ourselves whether it was in fact by design or more by necessity. More importantly, we will be surprised by the amount of time taken to prototype such AI. These classical game AI techniques (such as finite-state machines or scripts) appeal to us game developers because they can be easily controlled, but they suffer from this very same property; the content creators must craft each behaviour manually. Any progress in game AI necessarily involves finding a solution to this bottleneck without our designers losing control over their creations.

This book provides an overview of modern AI techniques that can alleviate the burden. Biologically inspired AI techniques—and machine learning in general—provide us with methods and tools for creating complex in-game behaviours in a manageable way. Not only does this allow designers to prototype simple tasks quickly, but it also means that additional resources can be directed to improving the believability of our characters. While such AI techniques enable the creation of behavioural content in a much more scalable fashion, they are also broadly applicable across the many disciplines of game programming, particularly in off-line tools, as they are already used in parts of the games industry.

In general, the next generation of games is relying increasingly on third-party software, rather than home grown systems. These solutions provide strong toolsets and standardised algorithms that empower the game developer to create game content with indirect support from the programmer. Biologically inspired AI techniques fit into this paradigm since they are available as a set of algorithms that process data. However, these techniques are no longer just loading the designers’ data directly from disk, but they are in essence assisting the creation process. For example, the AI can provide statistics about our gameplay prototypes, and find patterns in playtests to detect possible anomalies. Such powerful computational tools help produce higher quality behaviours and increase the scalability of the development process.

The role of us AI programmers in this environment is to provide a framework for the content creators. The designers decide what they want out of the machine learning, and we use our knowledge and experience to get the best results. Of course, there will always be a need for the classical AI techniques (Chapter X shows how they can successfully be combined with modern ones), but developers will increasingly default to modern approaches. This
book is a great opportunity for game programmers to extend their skill set with modern AI techniques. It may take a bit of time for biologically inspired AI techniques to become commonplace in the industry, but there is certainly a need for them. Most players dream of playing against highly believable adaptive opponents, and with developers that can leverage modern technology to solve any problem at hand, this goal is certainly attainable.

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