Scaling Games to Epic Proportions

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Abstract

An important aspect of computer games is the artificial intelligence (AI) of non-player characters. Currently in games, developers or players can create complex, dynamic behavior for a very small number of characters. However, neither the game engines nor the style of AI programming enables intelligent behavior that scales to a very large number of non-player characters; the languages that define character logic are typically very expensive to process.

In this talk, I will show how to solve this problem by modeling game AI as database queries. Instead of processing characters independently, we can combine all of their behaviors into a single logical query which can then be optimized. The talk will include an overview of the formal framework for specifying character behavior, as well as highlight some of the mathematics behind the ways that we optimize this behavior.

This talk describes joint work with Alan Demers, Christoph Koch, and Johannes Gehrke of Cornell University.

This talk should be accessible to undergraduates.