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Editorial: Nim, Racing Games and Advances in Computer Games 2021

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The first scientific contribution to this issue is *Nim Variants* by Mark van den Bergh, Walter Kosters and Flora Spieksma. It builds on Combinatorial Game Theory to address non-perfect information games. As Nim is strongly solved thanks to Combinatorial Game Theory, the authors propose to modify the rules of Nim so as to make it a non-perfect information game. Three variants are proposed where a player only receives partial information on the move played by the opponent. Schrödinger Nim where a player is only told which heap the move was on, not the amount of chips removed. Fuzzy Schrödinger Nim where emptying a heap is not signalled to the other player. Kriegspiel Nim where the other player is not informed of anything except the fact that a successful move has been executed. The authors compute Nash Equilibria for small variants of these three games.

Programs for difficult phantom games such as Kriegspiel or Phantom Go benefited from the Monte Carlo revolution in games. Finding the Nash Equilibrium for small instances of these games using the kind of methods used to solve small instances of non-perfect information Nim would be interesting. I suspect that playing in the center in 3×3 Phantom Go is a first player win.

The second scientific contribution is *Adaptive Rubber-Banding System of Dynamic Difficulty Adjustment in Racing Games* by Qingwei Mi and Tianhan Gao. With this paper we address Artificial Intelligence in video games. The goal here is not to win the game but to make it fun. The purpose is to dynamically adapt the difficulty of the game to the player. The proposed algorithm is tested in racing games.

It may interest board games researchers and programmers now that programs are much stronger than humans in many board games. It may be more fun for humans to win some of their games.

Cameron Browne, Akihiro Kishimoto, and Jonathan Schaeffer report on the Advances in Computer Games 2021 conference at the end of this issue.

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