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Simulating and Assessing Search and Capture Strategies for the Pokémon Game

Pokémon is a game developed by Nintendo to be played on a handheld device known as a "Game Boy," in which the player travels around a simulated world collecting "pocket monsters" and pitting them against one another in tests of strength, skill, and luck. Pokémon is quite complicated with many mathematical formulas involved in even the most basic game mechanics. I was interested in determining the most efficient method of locating and capturing any Pokémon in the game. Using the same equations the game programmers used for Pokémon capture as a starting point, I developed several functions in the programming language R which return the probability of catching a particular Pokémon as well as the best place and time of day in the game to capture it. Based on this I am able to determine the probability of catching a Pokémon in any situation, the average number of poke balls required, and the best place to capture the Pokémon. Because I am trying to capture all 719 Pokémon, this is an incredibly useful tool when playing the game as it provides easily accessible, organized, and player specific information.