What if a videogame could play itself? New York artist—and cognitive scientist—Ian Cheng has riddled out an answer that is winning over researchers and art lovers alike. Mr. Cheng, whose first museum solo show, “Ian Cheng: Emissaries,” is on view at New York’s MoMA PS1 through Sept. 24, has spent the past three years developing software that simulates animated games—with backdrops that include an ancient village nestled against a rumbling volcano, a teeming wildflower field and a spare, sandy atoll. The key distinction is that he has populated his scenes with foliage and figures who twitch and fight and feed each other in real time with no predetermined outcomes, an endless unspooling of artificial intelligence in beta mode.
At one point during the volcano simulation, Mr. Cheng said that he watched a group of villagers gang up on an outlier, kill him, drag his body into the center of town and urinate on him. “There was no algorithm for that,” he said. “It was horrifying, but it felt like a revelation since they had not been told to do anything like that.” In another simulation, he watched a pack of dogs encircle a man and repeatedly lick him, a man’s-best-friend response that was also unscripted.

The Museum of Modern Art said it was so impressed by Mr. Cheng’s work that it bought the trio of his simulations before the last one was even finished. Major collectors of video art like Dusseldorf’s Julia Stoschek have also bought early editions. This week, the artist signed with powerhouse New York dealer Barbara Gladstone.

Starting Sept. 22, Pittsburgh’s Carnegie Museum of Art will show his latest simulation, “Emissary Sunsets The Self.” In a fresh twist, curator Eric Crosby said that the Carnegie
gallery’s overhead lights will be synced to match the day-or-night scenario unfolding on the piece’s 13-foot-long LED screen.

“A lot of artists are working in response to a digital landscape, but he’s innovating in that space,” Mr. Crosby said. “He’s invented an entirely new art form with its own rules and norms.”

Fans of HBO’s rebelling-robots show “Westworld” will relate to the anything-goes uncertainty that pervades Mr. Cheng’s works, but the artist said he isn’t striving for a hyper-realistic setting. Instead, his programming allows characters to convulse and collide in mutations that look like software glitches. In the lush-garden game, he once watched an old-fashioned red telephone glom onto a nearby palm tree, a combination he calls a “self-made sculpture.”

A scene from ‘Emissary Forks at Perfection’ live simulation. PHOTO: IAN CHENG/PILAR CORRIAS/STANDARD (OSLO)

Growing up in Los Angeles as the son of graphic designers, the 33-year-old artist said he always wanted to work within the nexus of cognitive science and art. He earned a dual
degree at the University of California at Berkeley and worked afterward at George Lucas’s visual-effects and animation studio, Industrial Light & Magic. Instead of fawning over “Star Wars” characters, he gravitated to the company’s research and development division, where he said researchers were toying with new ways to simulate natural phenomenons like whirlpools.

Later, after art school at Columbia in New York and jobs with established artists like Paul Chan and Pierre Huyghe, he began experimenting, creating the volcano scenario in early 2015. The only narrative direction he gave was to create a trembling threat in the volcano, a shaman-leader who is coded to ignore it and the shaman’s daughter who is tasked with alerting her father to the impending eruption—but who often gets distracted by fellow villagers offering her food or a place to sleep or whatever daily-ritual the others want to enact in the moment. Mr. Cheng said he relished the godlike control he initially
had over these characters and the surprising pride he felt once he let randomness intervene.

“Art is my way of playing with people’s nervous systems, to seduce them but also unsettle them,” he said.

Peter Eleey, chief curator at MoMA PS1, said the work also raises intriguing questions for museums or collectors who want to store or study Mr. Cheng’s work for the long term. Since his pieces operate like a computer program instead of a film, there is nothing to archive—only software to start up or update as the artist sees fit. “At night, we turn the projectors off, but the piece itself keeps running,” Mr. Eleey said. “When we come in each morning, the Petrie dish is transformed.”