

# Gaming helps personalized therapy level up

Training computers to evaluate people could also boost workplace performance, online education

Using game features in nongame contexts, computers can learn to build personalized mental and physical therapy programs that enhance individual motivation, according to Penn State engineers.

Instead of the usual one-size-fits-all approach, assistant professor of engineering design and industrial engineering Conrad Tucker and colleagues want to use machine learning to train computers to develop mental or physical therapy regimens tailored to each individual patient, whether that person is recovering from a shoulder injury or trying to overcome anxiety.

To begin creating computer models for therapy programs, the researchers tested how to transform physical tasks into a gamified application by incorporating scoring, avatars, challenges and competition. Unlike using people to evaluate others on an individual basis, training computers to read individual people can scale up, Tucker said.

The researchers found that gamified applications with a scoring system, the ability to select an avatar and in-game rewards led to significantly fewer mistakes and higher per-



A study participant (face obscured) interacts with a computer game system during testing of game features for possible use in improving physical and mental therapy.

formance than those with a win-or-lose system, randomized gaming backgrounds and performance-based awards. The results, published in *Computers in Human Behavior*, potentially could be used to boost workplace performance and personalize virtual reality classrooms for online education.

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