Your STORY.

Where did the idea come from?

Minecraft has been applauded for its terrain generation for years. Traditionally, terrain was created in Minecraft using mathematical functions. However, this approach suffers from not being able to create interesting structures on Earth created from erosion, such as arches and cliffs. Coming up with a function that can describe these structures has evaded researchers and engineers in the field for years. We thought we might be able to use machine learning to fill this gap.

Why are you passionate about it?

I have been playing Minecraft since 2009, I love to build game technology and machine learning promises a new frontier on capabilities and experiences.

• The IDEA.

How did you approach the work?

Empower creators

We wanted to automatically generate complex and exciting structures from real world data in order to empower artists, game creators, and researchers to innovate and streamline their content production.

How does it work?

We trained a Generative Adversarial Network on real canyon (White Canyon, Utah) LiDAR point cloud data to generate new examples of Earth surfaces.

What was the most difficult part?

Collecting and extracting the necessary information from extremely large datasets to use for training.

What are the potential benefits to customers and Microsoft?

We can create terrains and 3D models trained from purely volumetric data, which will greatly reduce the time spent to create new worlds, characters, and content. Customers will be gamers, 3D artists, game studios, and researchers.

• MOVE FORWARD.

What’s needed to move the project forward?

Resources. A team to collect and process data at scale. Powerful machines to run training models on deep networks, and developers and researchers to optimize the models and improve accuracy. Integrating the terrains into the actual Minecraft game, into game engines, and other 3D modeling applications.

What was the most valuable thing you learned?

I learned that GANs offer a promising new opportunity for gaming and science. Our two-day project is proof that there is more to be explored and experimented.