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Exercise 1: Geo-guessing

GeoGuessr, a popular online video game that has become a sensation over the years, challenges players to guess exactly where they are in the world given a randomly selected image on Google Maps. Players can maneuver down the street using Google street view to gather as much information as possible. Once the player is ready they can select where they believe they are on a world map, and the closer they are, the more points they get. A perfect 5000 score requires a player to guess within 100 meters of the exact location. Pinpoint accuracy is required to achieve such a score, narrowing down the entire planet to an exact street in any country. It is an extremely challenging and competitive game and therefore professional “geo-guessers” have risen to form a tight knit community online. Posts from these pro geo-guessers where they showcase their inhuman skill to the general public have gone viral on social media such as Twitter and TikTok. These players can figure out the exact location of an image in just a tenth of a second, blowing the minds of millions of social media users. Using pattern recognition, geographic knowledge, and application of information theory, pro geo-guessers are able to perform feats that may seem impossible to the casual player.

One of the main ways pro geo-guessers are able to figure out where they are so quickly is pattern recognition. One might believe that painstakingly memorizing the entire planet is how these pros accomplish their magic, but that isn’t true in the slightest. At its core, GeoGuessr is a video game, and there are many giveaways in the structure of the game. For example, one of the

first things a pro geo-guesser looks at is the car carrying the Google camera. This seemingly irrelevant thing carries a treasure trove of information. The type of car and color of car are telltale signs of certain geographic regions. The camera quality is another giveaway, some countries have very high quality cameras while others are lower quality with visual glitches. According to vice.com, “Particularities of how and when the photo was taken can prove useful as well. Street View only used black cars in three South American countries, and a glitch showing a view of the Google Car is rare in the U.S. but occurs more often in Canada. The quality of the photo, which helps deduce which “generation” of Google Maps it’s associated with, can also help narrow down the list of possible countries as well,” (Strachan). Rather than relying on pure memorization, these patterns allow for rapid and accurate decisions. These observations are the biggest reason why these players are able to draw accurate conclusions within a fraction of a second. However, using patterns within the game is not always enough.

Beyond pattern recognition, geo-guessers do have a much higher than average understanding of geography. This approach involves recognizing distinctive geographic features within the image. Viral content creator and professional geo-guesser “Rainbolt” said “He started to realize that he could tell he had seen a particular shade of grass in South Africa and particular types of soil in Nigeria,” (Strachan). For pro geo-guessers, geography is a complimentary layer to their analysis after patterns have whittled down most of the globe. Things such as the soil color, city layout, mountain ranges, and other nuances in a place’s geography are used greatly to pinpoint an accurate location.

Information theory is a powerful tool for decoding locations in GeoGuessr. Central to information theory, entropy is the degree of randomness in a system. When a player enters a round, entropy is at its highest and it decreases as the player discovers clues in their

surroundings. GeoGuessr players look to maximize information gain by looking at things that decrease entropy the most, such as the language of street signs or distinctive landmarks. A geo-guesser skilled in information theory will be most efficient in narrowing down their location. They also look for redundancy. This is when multiple clues join together to point to the same place. This causes entropy to decrease and therefore the guess is more reliable. These are all ways information theory is used by professional geo-guessers.

After going through all the ways geo-guessers can pinpoint an exact location by looking at a still image for just one tenth of a second, it can seem alarming how much information seemingly innocent details in images contain.. This raises the issue of personal security and how easy it is to give oneself away online. It is extremely easy to give oneself away online. Consider a simple post of someone in their backyard. At first glance, this seems like an inconsequential post. However, after remembering the skills of professional geo-guessers, this innocent post suddenly becomes very revealing. Seemingly simple social media posts can easily be used by malicious people with the same skill as these geo-guessers. A post in a backyard may seem harmless but someone with evil intent can find the exact location of where that photo was taken using the color of the grass, terrain of the backyard, type of clouds in the sky, and many other giveaways. All of these details combined can likely lead to a pinpoint location of that backyard, and therefore, that person's address. Without even knowing it that person just exposed their home address to the entire world. This realization is extremely important when living in today's online world. Anything about anyone can be found out through ways one can never imagine. Just one person with ill intentions and some practice is all it takes to lose everything. Of course, there is not much one can do in this digital age, but being informed nonetheless is important.

Works Cited

Strachan, Maxwell. “The Guy Who Memorized Google Maps Says You Can Too.” *VICE*, 9 Sept. 2022, www.vice.com/en/article/ake7a5/geoguessr-rainbolt-interview.