

## AOTW: Rate Hikes and DeepMind

The Federal Reserve raised its benchmark short-term interest rate a quarter point on Wednesday and signaled up to six additional rate hikes this year.

The Fed's key rate, which it had pinned near zero since the pandemic recession struck two years ago, marks the start of its effort to control the worst inflation since the early 1980s. The rate hikes will eventually mean higher loan rates for many consumers and businesses.

The central bank's policymakers expect inflation to remain above the 2% target ending 2022 above 4%, according to updated quarterly projections they released Wednesday. "All signs are that this is a strong economy," Powell said, "one that will be able to flourish in the face of less accommodative monetary policy." Powell said that there are currently 1.7 jobs for every unemployed person in the U.S.

In a statement it issued after its latest policy meeting, the Fed noted that Russia's invasion of Ukraine and ensuing sanctions by the West "are likely to create additional upward pressure on inflation and weigh on economic activity."

The increased cost of fuel is not deterring the demand for leisure travel. U.S. carriers on Tuesday said travel demand has roared back after a slight decrease caused by the Omicron coronavirus variant and would remain strong enough to help them offset the increase in fuel costs with higher fares.

Atlanta-based Delta Air Lines Inc. said it was seeing an "unparalleled" increase in demand, resulting in the highest ticket sales in the company's history last week.

As COVID travel restrictions ease, like many others, I am looking forward to being able to travel regularly with my family again.

One of our favourite places to visit in the cold of winter is the Mayan Riviera, once the home of the ancient Mayans. Many of you will remember the theory that their calendar predicted that the world would end December 21, 2012, at the end of the 13<sup>th</sup> baktun, a Mayan period of about 394 years, yet here we still are nearly 10 years later.

There are few written references to the end of the 13<sup>th</sup> baktun. Most Mayan scholars cite only one: a stone tablet on Monument 6 at the Tortuguero archaeological site in Mexico's Tabasco state. It is a mystery what exactly the tablet says, because the glyphs or symbols are partially damaged. According to National Geographic, the images seemed to indicate that a God would descend to earth at the end of the

baktun. Although what would happen next was uncertain, scholars suggested it might have been a prophecy of some sort, an idea which was quickly picked up by new age websites and authors.

<https://www.nationalgeographic.com/science/article/111220-end-of-world-2012-maya-calendar-explained-ancient-science>

This example highlights the issues with trying to interpret ancient texts. Because of their age, they are often damaged. They are also often inscribed on inorganic material like stone or metal, which means that methods like radiocarbon dating cannot be used to find out when they were written. The artificial intelligence company, DeepMind is now turning its expertise to resolving this issue. Thea Sommerschild, a historian and machine learning expert on the project notes “To solve these tasks, epigraphers look for textual and contextual parallels in similar inscriptions,” said Sommerschild. “However, it’s really difficult for a human to harness all existing, relevant data and to discover underlying patterns.”

Based in London, DeepMind was founded by games prodigy and neuroscientist Demis Hassabis, along with Shane Legg and Mustafa Suleyman. The company, which was purchased by Google in 2014, creates systems that learn from experience, using only raw pixels as data input. Its projects have included AlphaGo, the first AI to ever beat a professional Go player, AlphaFold, for which it won the 13th Critical Assessment of Techniques for Protein Structure Prediction (CASP) by successfully predicting the most accurate structure for 25 out of 43 proteins, one of the most difficult scientific problems, and AlphaCode, an AI-powered coding engine that creates computer programs at a rate comparable to that of an average programmer.

<https://en.wikipedia.org/wiki/DeepMind>

For the Ithaca project, DeepMind researchers teamed up with historians and scientists in Italy, England and Greece, and trained the AI on 78,608 ancient Greek inscriptions, using both individual characters and complete words as inputs. Each inscription is labeled with metadata describing where and when it was written (to the best of historians’ knowledge). Like all machine learning systems, Ithaca looks for patterns, encodes it in complex mathematical models, and uses these inferences to suggest text, date, and origins.

According to a paper published in Nature, the model is 62 percent accurate in restoring letters in damaged texts, 71 percent accurate in attributing an inscription’s origins to one of 84 regions of the ancient world, and can date a text to within, on average, 30 years of its known year of writing.

Although these are promising results, Ithaca is not capable of operating independently of human expertise. “Ithaca was designed as a complementary tool to aid historians,” said Sommerschild. Its real value may be its flexibility. Although it was trained on ancient Greek inscriptions, it can be easily configured to work with other ancient scripts, and the company is already working on versions trained on other ancient languages, such as Hebrew, Demotic and Mayan.

The hope is that the technology can unlock the potential of AI systems working in cooperation with human experts, bringing new clarity to our understanding of past civilizations.

<https://www.theverge.com/2022/3/9/22968773/ai-machine-learning-ancient-inscriptions-texts-deepmind-ithaca-model>

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