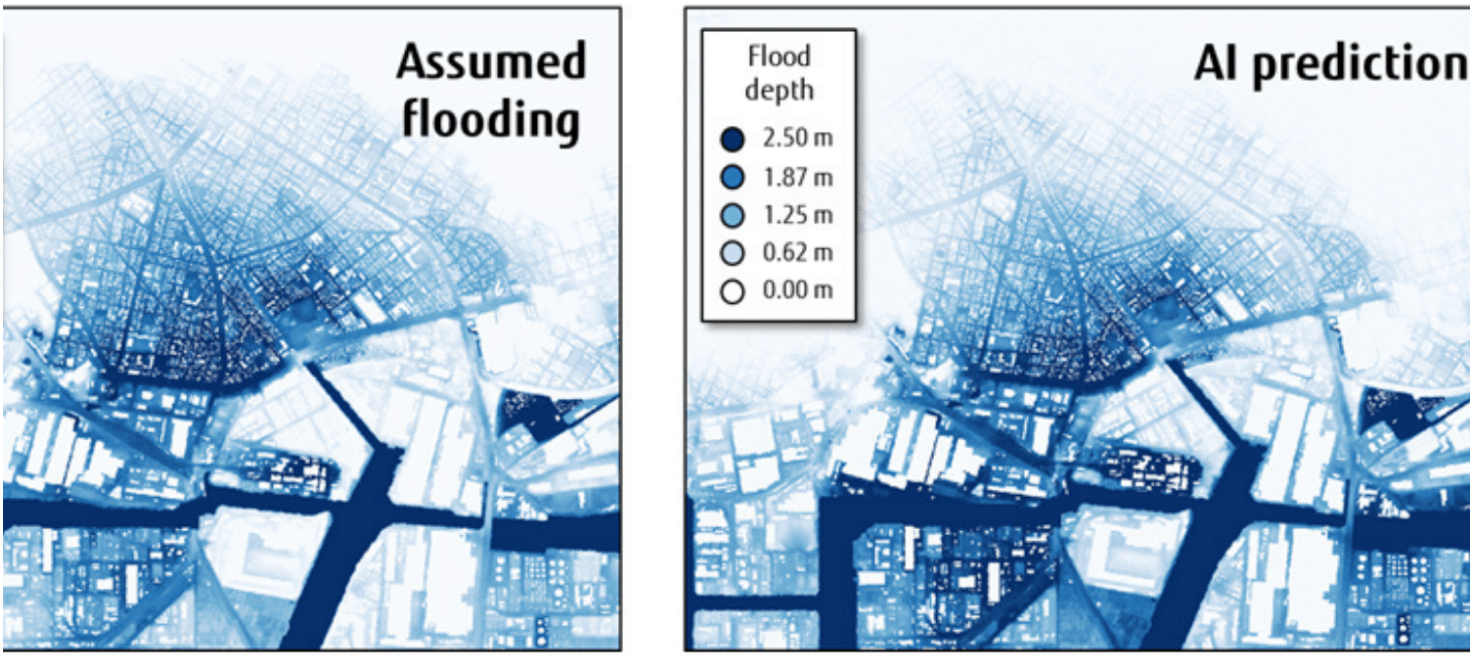

Using a supercomputer, a research group has developed an hyper-accurate tsunami flood prediction model that can run on an ordinary PC | Photo source Fujitsu

WORLD'S FASTEST SUPERCOMPUTER USED TO MODEL TSUNAMIS

COMPUTING & TECH

A Japanese supercomputer is being used to model potential flooding caused by tsunamis, in an attempt to improve safety

Spotted: Fugaku, the world's fastest supercomputer, is being used in a new joint initiative to develop an AI model that could predict tsunami flooding. The project is being undertaken by the International Research Institute of Disaster Science at Tohoku University, the Earthquake Research Institute at the University of Tokyo, and Fujitsu Laboratories.

Fujitsu Laboratories developed the supercomputer last year, in conjunction with the RIKEN Center for Computational Science. The low power consumption supercomputer will be used to advance drug discovery infrastructure, model climate change and to help solve other scientific issues. As a part of this work, the new joint initiative has carried out several high-resolution tsunami simulations.

In the event of an actual earthquake, tsunami waveform data from observations can be quickly input into the model, to make predictions on flood conditions in coastal areas before the tsunami reaches landfall. This forecast can then be used to evacuate residents, and plan the effects on infrastructure like buildings and roads. While it was developed using a supercomputer, the model can be run in just seconds using ordinary PCs, providing a practical, real-time flood prediction system.

According to Fujitsu, "By leveraging the exceptionally fast computing power of the supercomputer Fugaku, the project members generated training data for 20,000 possible tsunami scenarios ... By training an AI model with these 20,000 data sets, it was possible to ... predict the flooding of land areas with similarly high resolution from tsunami waveform data observed offshore at the time of an earthquake."

Accurate flood prediction is just one of the myriad uses for supercomputers, especially as they become more powerful and cheaper. At Springwise, we have already seen researchers who are mapping out uses for future quantum computers, and the development of a type of supercomputer that uses decentralised computing.

Written By: Lisa Magloff

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Takeaway:

Previously, the effects of tsunamis have been predicted based on databases which are prepared in advance, using simulations. The model is then adjusted based on real-world observations. However, developing the simulations relies on large-scale supercomputers, which makes them slow to implement – wasting precious time. The Fugaku project could significantly speed up and fine-tune this process to create hyper-accurate flood predictions, so emergency services can focus their efforts on where they will be needed most.