

tech

NUS researchers invent way to ‘teleport’ drinks over the Internet



Lead project researcher Dr Nimesha Ranasinghe (right) with the rest of the team (from left: Research engineer Pravar Jain, research assistant Shienny Karwita Tailan, and principal investigator Associate Professor Yen Ching-Chuan. Photo: Raymond Tham/TODAY

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SINGAPORE — While the act of physical teleportation remains in the realms of sci-fi, National University of Singapore (NUS) researchers have now developed a way to transmit a drink over the Internet — or at least replicate the taste of a particular drink from anywhere, at any moment on the planet.

The project, led by Dr Nimesha Ranasinghe, was presented to the public last month at a conference in Yokohoma, Japan. At present, the researchers are only able to replicate the taste of lemonade online, but work is underway to transmit more sophisticated flavours in the future.

How the “virtual lemonade” works is through the combination of a special “lemonade sensor” and a tumbler with electrical diodes.

The “lemonade sensor” is actually two sensors in one device: The first sensor detects the colour of the drink, the other measures the drink’s pH level (a numeric scale used to specify the acidity of a solution).

After these two attributes are recorded, the information is then transmitted online to the customised tumbler, which is filled with just plain water. The tumbler then uses LED lights at its bottom to replicate the colour of the drink, while electrodes around the rim send electrical pulses to your taste buds in order to mimic sourness.

The process is almost instantaneous, as demonstrated to TODAY by Dr Ranasinghe and his team. With the sensor set up in one room, and the tumbler in another, this reporter was able to conduct a taste test comparing the original lemonade and the virtual one. Except for a little more sweetness in the store-bought lemonade, the virtual lemonade was practically identical in taste.



Dr Ranasinghe and his team at the Keio-NUS CUTE Center had been working on the virtual lemonade project for around five months before presenting it to the public. The prototype cost around S\$100 to build, and the project came under a larger scope of producing “digital taste”, which the team has been working on for nearly six years.

Prior to the virtual lemonade project, Dr Ranasinghe’s team also produced utensils — such as spoons, bowls and chopsticks — that could also simulate particular tastes.



Among the benefits Dr Ranasinghe sees for his work is producing a healthy food or drink option for the elderly in the particular. For instance, his modified soup bowl was able to replicate the saltiness of miso soup, without the sodium content inside.

In addition, the digital taste project is also aimed at improving the palatability of food for the elderly.

“As we get older, our senses diminish with age... Diminished taste sensations and restricted intake of flavour enhancers have made malnutrition a common problem for the elderly,” he said. “(Our project) could potentially make food taste better (for the elderly).”

Dr Ranasinghe said the virtual lemonade project, along with some of his past inventions, could be on the market soon. The researchers are already in discussion with a manufacturer to produce a “robust” prototype that can undergo food-grade and more enhanced tests, while some local hospitals have already enquired on a device that could increase the taste sensation for the elderly, or stroke patients.

However, a device that can replicate any drink will take much longer.

“It’s still a challenging road ahead for all researchers... personally, I don’t like to predict this, but I would say at the very least it’ll take five to 10 years (to produce something that could replicate any drink)... Adapting it into our daily lives, it’ll take even longer than that.”

Dr Ranasinghe also joked: “If you’re wondering whether I can produce alcohol, I think I will face difficulty trying to get research approval from the university for that... Maybe I’ll try it at home.”

Still, even if such a device does come to fruition, Dr Ranasinghe doesn’t see it completely replacing “real” drinks.

“It doesn’t make sense to virtually simulate the nutrition as our bodies require them for our very survival. We cannot live in a completely simulated environment as we need sustenance, vitamins, nutrition, etc. for our livelihood,” he said.

Dr Ranasinghe’s project as such is more geared towards “enriching digital interactions”.

“The future of social media will be very interesting as per the current trends. Researchers are trying to not just share some information through their services (for example, Facebook), but to share whole experiences,” he said.

