ARTIFICIAL INTELLIGENCE WITH DR PAVEL BORISOV AND PROFESSOR SERGEY SAVEL'EV

TALKING POINTS

KNOWLEDGE & COMPREHENSION
1. What are neurons, and how do they exchange information?
2. How is a memristor different from a regular resistor?
3. What steps were taken by Pavel's team to develop and test novel memristor thin film devices?

APPLICATION
4. How could Sergey's discoveries be applied in a self-driving car?
5. What areas of your everyday life do you think could benefit from artificial neural networks?

ANALYSIS
6. Why can regular computer programs not carry out tasks like facial or speech recognition with the same efficiency as the human brain?
7. What are the main motives behind Sergey and Pavel's research?

SYNTHESIS
8. What steps could a scientist take to design an AI system to recognise human speech?

EVALUATION
9. Do you think that people's concerns about artificial intelligence are justified? Why, or why not?

ACTIVITY

Go online and find a real example of an artificial neural network that you find interesting. It could be a system being developed by a big company or an experiment by a computer science YouTuber.

Create a short presentation for your class explaining how the system works, and how it is being used.

Some examples include:

- a neural network learning to play the computer game Snake: **www.youtube.com/watch?v=zIkBYwdkuTk**
- a neural network that can decipher and restore ancient texts: **www.youtube.com/watch?v=rq0Ex_qCKeQ**
- a neural network to self-drive a car: **www.youtube.com/watch?v=cFjYinc465M**
- the technology required to develop AI hardware: **www.youtube.com/watch?v=owe9cPEdm7k**

MORE RESOURCES

- Loughborough University's STEMLab offers hands-on engagement with science, engineering and technology for school-age students: **www.lboro.ac.uk/study/stemlab/outreach/outreach**

- This article in *The Engineer* explains Sergey's work and includes a video guide to the memristor: **www.theengineer.co.uk/content/news/ai-project-aims-to-mimic-processes-of-the-human-brain**