

STEM Student Challenge Workshops

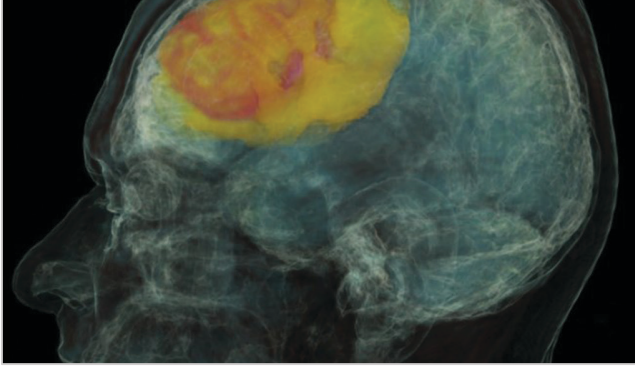
Workshop guide

Hold a mini STEM Student Challenge to drum up participation for entries from your school, or to kick-start students in creating their entries.

Students will need access to a computer for research (1 per group), a pen and a storyboard worksheet. Allow up to an hour.

- Divide your class up into groups (3-6 students works well).
- Give each group one of the reference sheets (the different reference sheets represent the three different categories in the STEM Student Challenge).
- Show the students the [Microsoft Future Productivity Vision video](#) (the video is Microsoft's vision for 10 years in the future).
- Ask the students whether they saw any examples in the video that relate to the category on their reference sheet, e.g.:
 - AI and VR - virtual presence on the whiteboard
 - Data Security – bracelet allowing access to office
 - Healthcare – countertop that analyses the drink
- Ask the students to think about what they already know about that field and use the information and links on their reference sheets and the information they saw on the video to come up with an idea for a technology (for their assigned category), that could exist in 20 years' time.
- Check in with them on their ideas. Ensure they check to see if the idea is already being worked on. If so, encourage them to think even further ahead. Once they've come up with their idea, ask them to use the [storyboard worksheet](#) to sketch out how they could depict their idea in a short video.
- To conclude the workshop, ask the students how they would feel about actually being able to bring their ideas to life in the future. This is a great opportunity the point that STEM subjects will help them to have the skills to do so.
- If the students are not already registered for the STEM Student Challenge, ask who would like to take part, and [register them](#) to bring their idea (or a new idea) to life in a video entry. If they are going to proceed, make sure they consider the Challenge criteria in the [information pack](#).

Reference Sheet - Healthcare at Microsoft



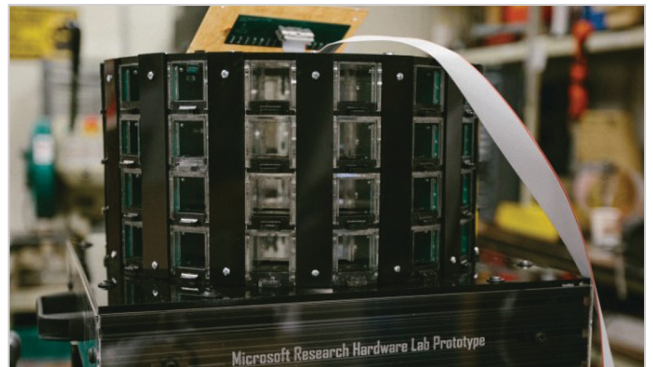
InnerEye is a research project that uses state of the art artificial intelligence to build innovative image analysis tools to help doctors treat diseases such as cancer in a more targeted and effective way.



Microsoft Health helps you live healthier by giving you actionable insights into how your physical activity benefits your overall health. The app allows you to view Microsoft Band data and insights about your step counts, workouts, and even sleep quality in the web dashboard. Easy-to-understand graphs chart data that are important to help you understand your current, and changing, fitness levels.



DNA is the programming code of living things, and our researchers are working on using computing to program DNA. At Microsoft's research labs, computer scientists, programmers, engineers and other experts are trying use computer science in this way to solve one of the most complex and deadly challenges humans face - cancer.



Project Premonition aims to use autonomous drones, cutting-edge molecular biology and advanced cloud-based data analysis to prevent disease outbreaks. The system collects and analyzes mosquitoes to look for early signs that potentially harmful diseases are spreading.

Visit these websites: news.microsoft.com | microsoft.com/research

Watch this video: microsoft.com/enterprise/productivityvision/default.aspx

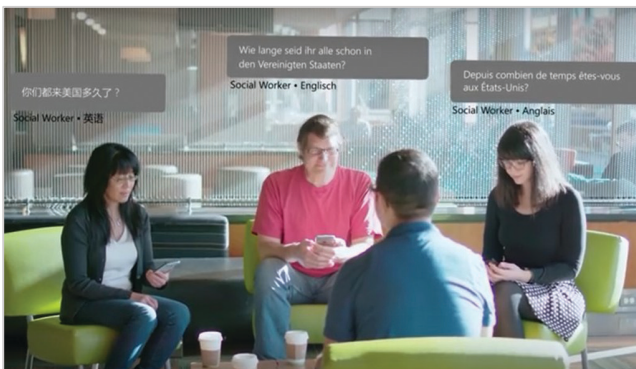
Reference Sheet - AI and Virtual Reality at Microsoft



Project Malmo is a sophisticated AI experimentation platform built on top of Minecraft. It aims to discover how we can develop AI that learns to make sense of complex environments and learns from others, including humans, how to interact with the world. Project Malmo is addressing these challenges by integrating deep reinforcement learning, cognitive science, and many ideas from AI.



Microsoft HoloLens is the first self-contained, holographic computer, enabling you to engage with your digital content and interact with holograms in the world around you.



Recently, The Children's Society started using the Microsoft Translator live feature, a new tool currently in preview that delivers live, in-person speech translation capabilities via Internet-connected smartphones, tablets and personal computers. The technology the Society to communicate directly with the young men The Children's Society serves without requiring third-party interpreters.

Visit these websites: news.microsoft.com | microsoft.com/research

Watch this video: microsoft.com/enterprise/productivityvision/default.aspx

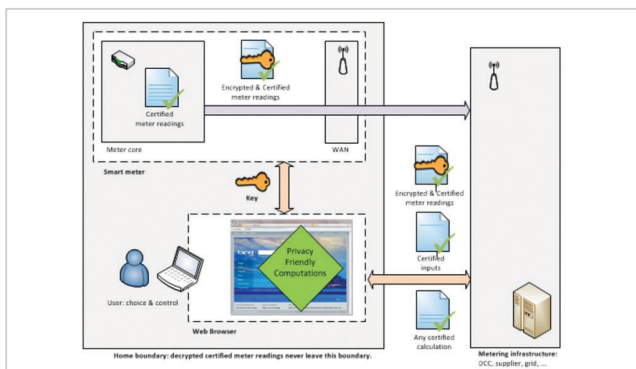
Reference Sheet - Data Security at Microsoft



Windows Hello is a more personal, more secure way to get instant access to your Windows 10 devices using fingerprint or facial recognition. Surface Pro 4, Surface Book, and most PCs with fingerprint readers already work with Windows Hello. You can also sign in to your PC using Windows Hello companion devices, such as Microsoft Band and Windows phones.



Homomorphic encryption (HE) refers to a special type of encryption technique that allows for computations to be done on encrypted data, without requiring access to a decryption key. While traditional encryption schemes can be used to privately outsource data storage to third parties, the data cannot be used for computations without first decrypting it, resulting in a huge loss of utility. HE allows computations to be performed without first decrypting the data.



Many smart metering systems threaten users' privacy by disclosing data about consumption to utility companies, e.g. power suppliers. We have designed a system that allows for precise billing of consumption while not revealing any consumption information to utility companies.

Visit these websites: news.microsoft.com | microsoft.com/research

Watch this video: microsoft.com/enterprise/productivityvision/default.aspx

Resources and downloads

Useful workshop resources

Microsoft News Centre

<http://news.microsoft.com/>

Microsoft Research website

<https://www.microsoft.com/en-us/research/>

Microsoft Productivity Future Vision video

www.microsoft.com/enterprise/productivityvision/default.aspx

Microsoft Research YouTube channel:

www.youtube.com/user/MicrosoftResearch

Microsoft Research work in artificial intelligence:

www.microsoft.com/en-us/research/research-area/intelligence-machine-learning

Microsoft Research work in data security:

www.microsoft.com/en-us/research/research-area/security-privacy-cryptography

Microsoft Research work in healthcare:

www.microsoft.com/en-us/research/research-area/medical-health-genomics

Useful downloads

[Storyboard worksheets](#)

[STEM student challenge information pack](#)