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Facebook chief gives Imperial sneak peek into tech future

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Mike Schroepfer shared his insights with Imperial at a talk showing some of Facebook's plans for the next decade.

Schroepfer, the company's Chief Technology Officer, introduced a range of science fiction-esque developments that Facebook is working on for the future – from high-altitude drones that act as roaming internet signals to computers that think like humans and virtual reality technology that brings people together.

The talk, given to a 700 strong audience of Imperial staff and students, outlined Facebook's '10 year vision' of where the company is going and the innovations it's looking to develop.



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The vision is centred around three pillars: connectivity, artificial intelligence and virtual reality.

Connectivity

With global connectivity becoming so important, Facebook is exploring how to connect people to the internet who currently lack the required infrastructure. Schroepfer presented the company's Aquila project – a lightweight solar powered drone that uses laser technology to beam down internet access to remote areas.

“The reason internet access isn't available everywhere is that it's incredibly expensive to build the infrastructure to connect people,” Schroepfer said, highlighting the challenges faced in expanding global connectivity.

“Aquila is our high altitude, long endurance solar powered aircraft designed to stay aloft for three months at a time. It will circle a region at an altitude of between 60,000 - 90,000 feet.”

With a full scale version of the plane already produced, the team are looking to begin the testing of this new technology soon.

Schroepfer stressed the importance of open source data in aiding connectivity and collaboration – such as Facebook's

Open Compute resource, which provides downloadable plans for their server systems and other hardware.

Highlighting the company's range of open source applications and software, Schroepfer cited research from Imperial which was used to develop Infer – the programme which Facebook uses to analyse the code in their mobile apps on iOS and Android .

“We’ve found and fixed hundreds of bugs automatically as a result of this. It’s a really key component of being able to build an app and ship it weekly to a billion people. If you want to do this without everything grinding to a halt it’s really helpful to have a system that automatically detects and helps with bugs.”

Artificial Intelligence

During the talk Schroepfer demonstrated some of the artificial intelligence technology that Facebook is developing to make the site smarter and more responsive to its users.:

“The problem that we’re trying to solve with it [artificial intelligence] is just the massive increase in data online that we all have to figure out how to manage and sort through,” Schroepfer said.

“The amount of data our algorithm sorts through to decide what to put in your news feed is growing by 40-50% every year. How many people are going to get 40-50% more hours awake next year to deal with it?”

The way Facebook is looking to solve this is by developing systems to deal with all this extra data, systems that think and sort this information more like humans.

Created by merging a memory system with a neural network, Facebook’s Memory Networks programme which launched earlier this year can learn new information such as new languages to understand and analyse data.

With this technology Facebook hopes to create a better user experience on its platform with better targeted ads and content on your news feed:

“If we understand the context of a photo we can do a much better job at showing you what you want on your feed. Say you’ve got a friend who is really into soccer and you’re not that keen on soccer but he’s posting it every single day. We’d have the capability for you to tell us that you love this friend and want to see all their posts but just a few less of the soccer ones.”

Virtual Reality

With 8 billion videos being shared on the site every day, Facebook see 360 video and virtual reality (VR) as the next major development. It is something they trialled earlier this year with the 360-degree Star Wars trailer.

For Schroepfer this is about providing the opportunities for users to experience a whole virtual world as they would see it if they were there.

As well as Gear VR, Facebook's low cost mobile VR headset launches next year alongside Oculus Rift, their PC based system, the team are working on adding touch to the VR experience through lightweight hand controllers.

“Enabling a hand presence in VR means you can see your hands in 360-degrees of freedom to do a thumbs up, point, fist bump and do all sorts of things,” Schroepfer explained, excited about the technology's potential.

“You can have this amazing personal experience with someone, you can see where the person is looking, you can hand them objects and talk to them. They happen to be in a pod next to you but in the long run we hope that pod could be a hundred or a thousand miles away.”

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