

# Tec and University of Leeds collaborate on AI and healthcare



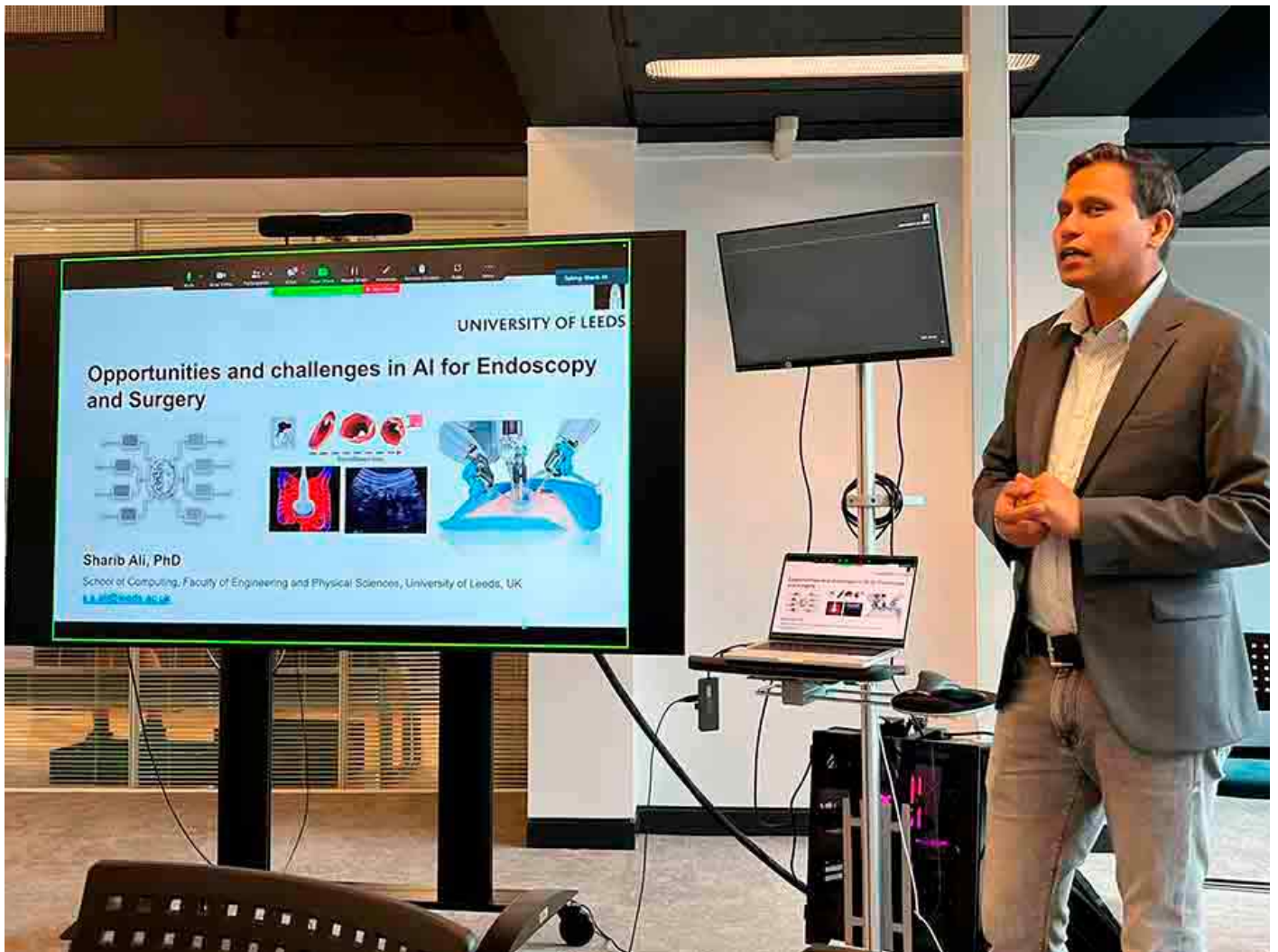
Gilberto Ochoa Ruiz, a professor at [Tec Guadalajara](#), and his PhD student, Mansoor Ali Teevno, visited the [University of Leeds](#) in the United Kingdom in partnership with the [Worldwide Universities Network \(WUN\)](#) to collaborate, conduct a workshop, and exchange best practices on Artificial Intelligence (AI).

Tec representatives explored the development of AI solutions in healthcare. They conducted the workshop “*Opportunities and challenges in emerging technologies in healthcare*,” in addition to exchanging best practices and exploring options for research collaboration.

During their stay, they focused on **minimally invasive surgery (MIS)** research and Ochoa contributed to the research proposal: “*Optimise: Novel Robust computer Vision Methods for Minimally Invasive Surgery*,” which will continue in 2024.

The visit also promoted **international cooperation** by exploring new opportunities for joint financing to promote projects with greater impact.

Ochoa is part of the Tec's **advanced artificial intelligence group**, made up of researchers from different campuses who also collaborate with **the Tec's AI Hub**.



/> width="900" loading="lazy">

## AI to transform healthcare

Gilberto Ochoa, who is the leader of the **CV-inside** (*Computer Vision for Image Analysis & Biomedical Engineering*) lab at [Tec Guadalajara](#), said that such international cooperation would help in the creation of **AI tools** and **public datasets** that drive **new technology** for **MIS**.

He explained that “*AI has the **potential to transform** the way different endoscopic examinations and operative procedures such as laparoscopy are performed.*”

Ochoa described **computer vision-guided MIS** in particular as a **viable alternative to open surgery**, as it is less painful and leads to shorter recovery times.

However, he pointed out that with current MIS technology, such progress comes at the **cost of increased complexity**, which places a burden on physicians, resulting in error-prone procedures.

He said this means there is a need for new **surgical navigation assistance (SNA) systems**, which provide the physician with contextual information about surgical instruments and the area of interest in real time.



/> width="900" loading="lazy">

## Computer vision

Ochoa added that “*although accurate tracking of surgical instruments in endoscopy could play a **crucial role in MIS**,*” it remains a **challenging task** when using **current AI models**.

“*There is a need to **develop new computer vision methods for SNA** that lead to safer healthcare procedures,*” he said.

He added that to achieve this, “*new strategies for training **computational vision models in MIS** must be proposed.*”

A team composed of academics from different institutions worked on the research proposal: “**Optimise: Novel Robust computer Vision Methods for Minimally Invasive Surgery.**”

The **initiative** was **funded by the WUN consortium**, of which the Tec is a member, and **will continue throughout 2024**. Participating were Gilberto Ochoa (Tec de Monterrey), Sharib Ali (University of Leeds), and Kate Farrahi (University of Southampton).

*“New computer vision methods need to be developed.”*

## **AI for surgical navigation**

The goal of the proposal is **to develop robust and generalizable computer vision methods** to provide real-time assistance systems that provide the surgeon **with contextual information for intraoperative guidance during MIS**.

A key part of the project involves the **creation of new datasets**, as well as the definition of metrics and evaluation methodologies to implement **computer vision methods for surgical navigation assistance**.

In the long term, they aim to **design, test, and validate novel real-time deep learning methods** that are robust enough for stringent MIS operating conditions and capable of operating in multiple types of procedures.

One of the main goals of the project is to create a **new public dataset to train new computer vision models for MIS**, so student **Mansoor Ali Teevno** is continuing his stay in Leeds to work with researchers and clinicians.

Once this **dataset is finalized, it will be made public to the scientific community** and other researchers will be able to develop models capable of performing well regardless of which equipment is used for image acquisition in the operation or in which hospital center.



/> width="900" loading="lazy">

## Healthcare opportunities workshop

The *workshop “**Opportunities and challenges in emerging technologies in healthcare**”* included a number of talks and a roundtable, with **20 in-person attendees and 30 online.**

The first talk was by Kate Farrahi, **from the University of Southampton**, who presented “**Deep Cascade Learning,**” for federated learning applications in the context of **hospital databases.**

Gilberto Ochoa spoke about his project “**[Endoscopic recognition of kidney stones by computer vision,](#)**” funded by ECOS Nord and CONACHTY with colleagues from the ***Centre de Recherche en Automatique*** in France.

*“AI has the potential to transform.”*

**Another presentation was** entitled “Kinematic signatures of spatial perception in prehension movements,” delivered by **Carlo Campagnoli**, from the **School of Medicine and Health, University of Leeds.**

Lastly, **Sharib Ali**, from the **University of Leeds**, talked about “**Opportunities and Challenges in AI for Endoscopy and Surgery.**”

Among those attending the workshop were several members of the [LatinX in AI](#) community, of which Gilberto Ochoa Ruiz is a member, as well as several Tec graduates.

**READ ALSO:**

<https://conecta.tec.mx/en/news/national/institution/tec-first-university-latam-its-own-artificial-intelligence>