AIVANCITY

LEARNING TRIP PORTO

REPORT

Author:

Karl SONDEJI

Date:

May 2026

Master Data Engineering & Cloud Computing

Porto's Learning Trip report

A look back at an enriching learning trip to Porto focusing on engineering, data and artificial intelligence.

Last week, I had the opportunity to take part in a learning trip organized in Porto, with the aim of broadening my knowledge of engineering and AI through academic, industrial and technological engagements.

Upon our arrival, we were welcomed at the Universidade Lusíada de Porto for a presentation about the university and the learning trip program. The learning trip alternated between company visits, conferences on data and AI, and socio-cultural activities.

Organizations

During this trip, we had the opportunity to visit several inspiring companies and innovation centers.

Volkswagen

On the first day, we started by visiting the company Volkswagen Digital Solutions.

Volkswagen offices

Volkswagen Digital Solutions is the technology and software division of the Volkswagen Group in Portugal. The company forms part of the Volkswagen Group's digital ecosystem and is involved in developing digital solutions used worldwide by the Group's various brands (Volkswagen, Audi, Porsche, Škoda, etc.).

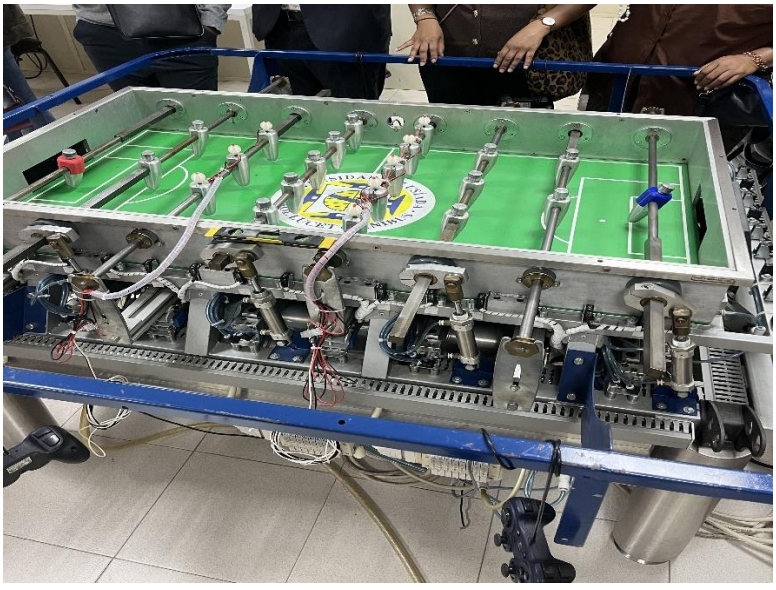
The company operates in the fields of software development, cloud computing, data and digital engineering. The teams work on cloud platforms (AWS), internal management tools, data-driven solutions and large-scale HR systems, as well as on projects related to digital transformation and the connected industry.

What makes this organization particularly interesting is its hybrid nature: although based in Portugal, it is involved in the Volkswagen Group's strategic international projects. It also serves as a concrete example of Portugal's emergence as a European technology hub.

Volkswagen's Digital Solutions division is working on the development of digital features that will subsequently be integrated into Volkswagen products. At Volkswagen Digital Solutions, I came across an approach that really struck me. Rather than relying on generic AI available online, the teams develop specialized agents, trained on their own data, operating in a closed loop. These agents are customized (enhanced with RAG) and trained in-house using open-source models that can be downloaded locally and run in a closed loop, such as Llama, and these are hosted in their cloud environment, AWS. Each agent has a specific role: one will specialize in tracking tasks and the progress of a specific project, while another will specialize in checking bugs and notifying users in a specific group working on the project in question. Volkswagen's digital solutions division is working on the development of digital features that will subsequently be integrated into Volkswagen products. What is striking is the logic behind it, the desire to retain control over data, improve accuracy, and build tools that integrate with existing workflows.

Famalicão Engineering and Technology Laboratory campus

The following day, we continued our study trip with a visit to the Famalicão campus of Lusíada University. We went to the engineering and technology laboratory campus. The professor in charge of the laboratory introduced us to the various research projects being carried out there, covering industrial engineering, robotics, intelligent systems and many other topics.



Robotic electronic table football

The Engineering and Technology Laboratory at the Famalicão campus of Universidade Lusíada is a facility dedicated to applied research, experimentation and student training in the field of engineering. The university is part of the Universidades Lusíada network, a private Portuguese university group renowned for its vocational focus and close links with local businesses and industry.

What sets this laboratory apart is its strongly practice-oriented approach. students and researchers work on real-world industrial challenges, often directly linked to the needs of regional businesses (notably CITEVE).

This brings us round to the next section.

CITEVE

CITEVE is a Portuguese technology center established in 1989 to support innovation in the textile and clothing industry. It is a private, non-profit organization that plays a major role in the modernization of the Portuguese textile sector, which has historically been very significant in the northern region of the country (with over 630 partner companies).

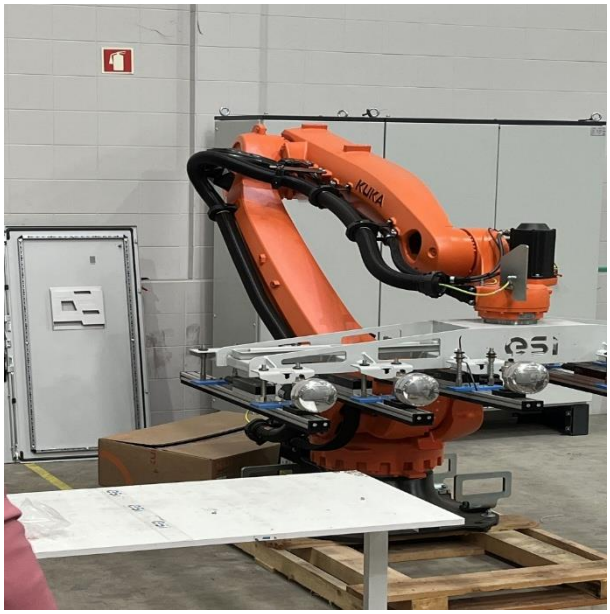
Robotic car, controlled using Carbon

The center is active in several fields, including research and development, certification, laboratory testing, textile innovation, automation, smart materials (as shown above), sustainability, fashion and Industry 4.0. CITEVE supports companies in the development of technical textiles for a variety of sectors, such as sport, the automotive industry, the medical sector and personal protective equipment.

What sets CITEVE apart is its ability to bridge the gap between academia and industry. The center has state-of-the-art laboratories and pilot plants for testing and prototyping new materials and industrial processes, around 180,000 tests are carried out in the laboratories each year.

ESI Robotics

ESI Robotics is a technology company specialising in industrial robotics and automation. Founded in 2007, it develops bespoke solutions designed to improve productivity and efficiency at industrial sites.

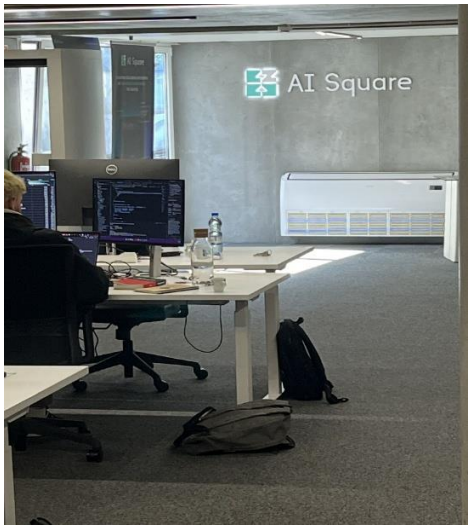


Production robot arm

The company operates in a wide range of sectors, including the automotive, food and drink, medical, metalworking, construction and polymers industries. Its teams design robotic cells, automated systems and smart production lines.

What makes ESI Robotics particularly appealing is its “end-to-end” approach. The company handles the design, engineering, manufacturing, integration and deployment of industrial solutions all under one roof. Our tour of the offices and then the manufacturing workshops gave us a clear understanding of this entire value chain.

At ESI Robotics, I saw how AI is integrated into industrial production lines, reducing errors and standardising quality so that companies can speed up the production and delivery of finished products. What particularly interested me was the work they are doing in what they call the AI Square.



AI Square

AI Square is a kind of mini data lab, where they will create and train powerful machine learning models designed to enhance the versatility of their production machine.

This is because one of the problems they face is that a production line designed for a specific product will perform very well for that product, but if, for whatever reason, their customer changes the product's specifications (dimensions, etc.), or if one of their customers wants to manufacture a different product with similar specifications on the same line, the line's productivity will drop significantly and will require major adjustments to return to the expected level of productivity.

Casa em Movimento

On Thursday morning, we began the day with a visit to Casa em Movimento, an architectural and technological project that aims to rethink housing through smart, dynamic homes capable of adapting to their surroundings.

Casa em Movimento

The project combines architecture, mechanical engineering, automation and energy efficiency. The concept is based on structures capable of moving or reconfiguring themselves automatically in order to optimise natural light, energy consumption and occupant comfort. This house is designed to be self-sufficient; in other words, thanks to its 42 photovoltaic panels, it generates far more energy than it needs to operate, and in fact produces enough to power the electric cars parked in the car park opposite.

It is estimated to weigh around 60 tons and takes approximately 40 minutes to complete a 180° rotation, this rotation is carried out automatically (or manually) depending on the position of the sun or wind speed, thanks to sensors located all around the house which send data that is continuously processed and interpreted.

This project cost between €5 and €8 million to bring to fruition, but according to the company behind it (Arch in Motion), once the technology has been fully mastered and brought to market, a house of this type will cost around €700,000.

What makes Casa em Movimento unique is precisely this fusion of architecture and structural engineering. The building combines home automation and smart systems to interact with its surroundings, making it a tangible demonstration of the possibilities offered by technology applied to sustainable housing.

Farfetch

Farfetch is a technology company specialising in digital luxury and high-end e-commerce. Founded in Portugal in 2007 by José Neves, the company has grown into a global platform connecting luxury boutiques, brands and consumers in over 190 countries.

Farfetch operates at the intersection of several sectors (technology, data, artificial intelligence, logistics and luxury fashion). The teams develop digital platforms, personalisation tools, data-driven recommendation systems, as well as large-scale logistics and e-commerce solutions.

Farfetch offices

One of Farfetch's distinctive features is that it has succeeded in establishing, from its base in Portugal, a technology company with a global reach in a sector historically dominated by major international luxury groups.

At Farfetch, I saw first-hand what it means to "scale up", with systems that process massive volumes of data in real time, and how AI is put to best use in personalised recommendation algorithms and predictive logistics.

Conferences

During this trip, we also had the opportunity to attend several conferences.

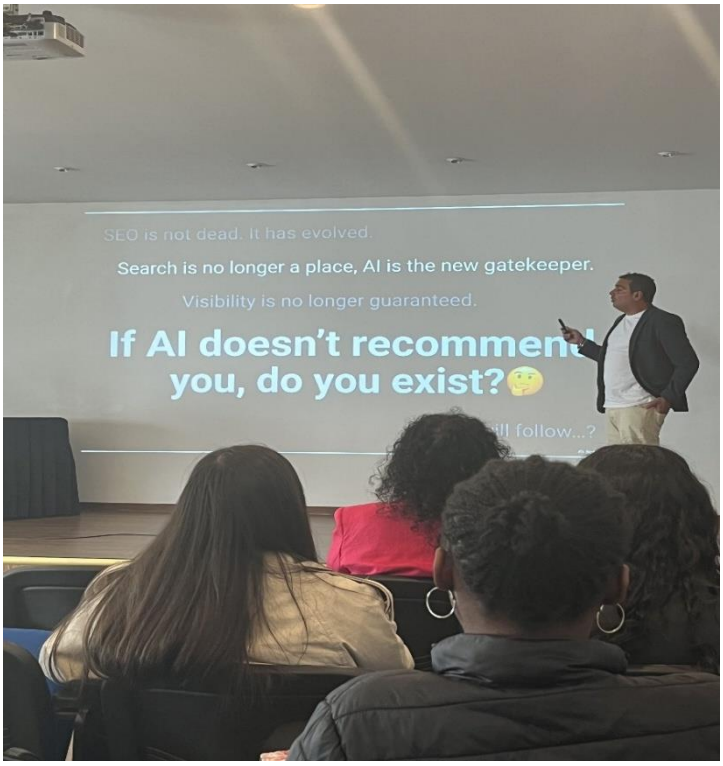
The first conference brought together local business leaders, such as the Managing Director of CITEVE, the Founder and CEO of Tima Intelligence, the Founder and CEO of AMF Safety Shoes, and the Mayor of Famalicão, to discuss the future of industry, particularly in the textile and manufacturing sectors in the face of technological, human and environmental challenges.

What I take away from this conference is that modernisation is, above all, a process of continuous improvement, not only of machinery but also of processes. In this context, a company's growth should not be seen as an end, but as a means of promoting its values, appeal, well-being, development and transparency.

The meeting also touched upon a paradox currently facing the fashion industry, a sector that has come under heavy criticism for its environmental impact. Consumers are demanding greater transparency regarding the origin of products, whilst the market continues to push for cheaper and more customisable clothing.

Considering these challenges, the speakers highlighted the need for a diverse range of professionals, engineers, physicists, chemists and programmers, who can work together in an interdisciplinary manner. They also emphasised the growing difficulty in recruiting talent in an industry facing significant economic pressure and intense global competition.

The following day, we attended another meeting, this one attended mainly by lecturers and researchers from the University of Lusíada, with the main topic being the impact of AI on the industrial sector.



AI conference

This conference gave me the opportunity to reflect further on the rapid development of artificial intelligence and its impact on our daily lives. Today, AI is already transforming the way we search for information, work and produce. Tomorrow, it will surely be capable of acting and making decisions independently.

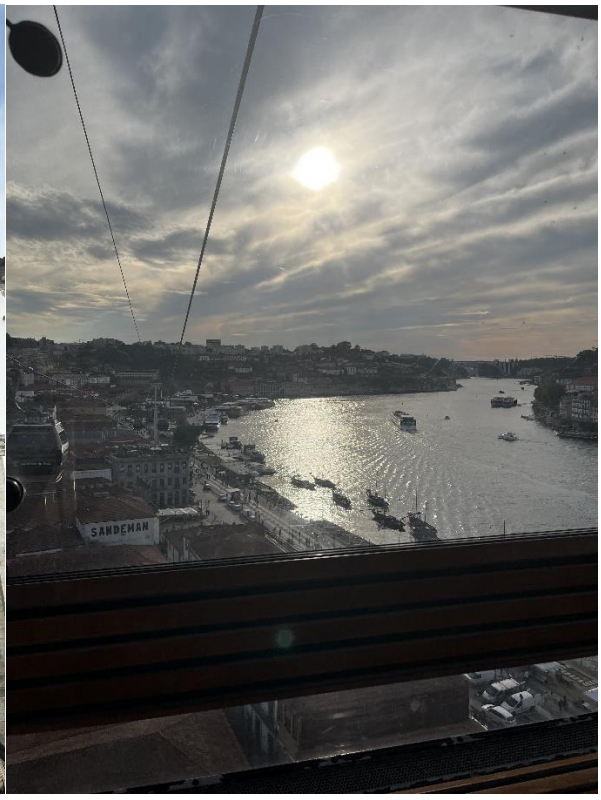
What strikes me most about this meeting is the idea that we are at a turning point between tools that assist (co-pilots) and agents that act autonomously (auto-pilots), and that this shift is closer than we think and is redefining the skills that businesses will need.

Cultural activities

As well as company visits and discussions on innovation, this learning trip also provided an opportunity to discover Porto's rich cultural heritage. On Friday, I was able to visit the majestic Porto Cathedral, a true historical symbol of the city, which offers an impressive view of the city's iconic neighbourhoods and the River Douro. We then took the cable car up to get a bird's-eye view of Porto's unique architecture and gain a better understanding of the identity of this city, where history and modernity coexist harmoniously.

This cultural immersion continued with a visit to Porto's famous wine cellars, which bear witness to a long-standing tradition and a heritage deeply rooted in the local economy. We also explored the Mercado do Bolhão, one of the city's most iconic markets, where Portuguese traditions, cuisine and craftsmanship come together. These visits helped to round off the human aspect of the trip and provided a better understanding of the local culture, which also plays a vital role in the region's innovation and appeal

Porto's Cathedral



Porto's cable car

Conclusion

Through the site visits, talks and discussions with the professionals I met, this learning trip enabled me to explore several key topics related to engineering, data and artificial intelligence in greater depth.

I gained a better understanding of how engineering teams collaborate within a company, from the design phase right through to the deployment of solutions. These discussions also highlighted the vital role played by cloud and data engineering in addressing the challenges of availability, storage and performance that businesses face today.

This trip also provided an opportunity to see first-hand how AI and machine learning can be used to optimize, streamline and speed up production processes, whilst boosting productivity in industrial organizations.

Finally, these discussions have sparked a broader debate on the rapid development of artificial intelligence and its impact on our daily lives. AI is already transforming the way we search for information, work and produce. In the future, we will gradually move from “co-pilot” tools towards autonomous agents capable of acting, making decisions and interacting with ever-greater independence.

Beyond the technical knowledge, this learning trip has, above all, given me a better understanding of the changes currently taking place in the fields of data, engineering and artificial intelligence.

I’m returning with an even clearer picture of how technological innovation can address real-world industrial challenges and bring about lasting change in businesses and the way we do things.

A big thank you to the companies, speakers, teaching staff, chaperones and Luisada University for their warm welcome and the quality of the discussions.

Thank you for the reading!