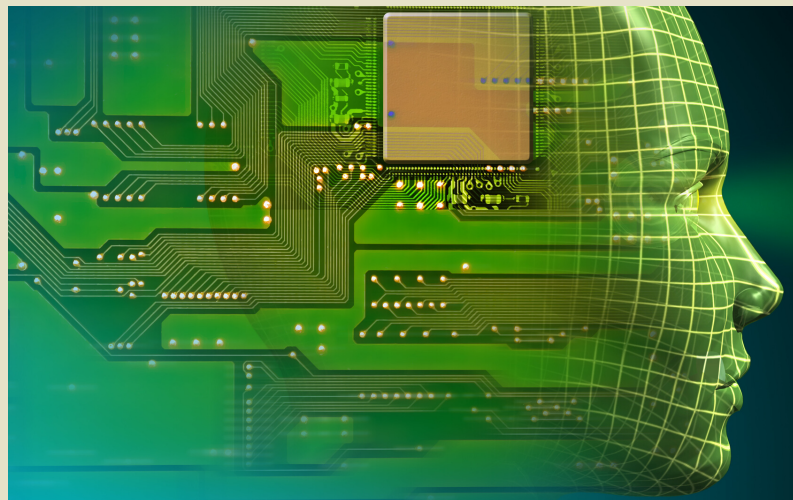


WHO WILL GET HIRED IN THE AI AGE?

The kinds of skills needed to make artificial intelligence work in the real economy may be closer to plumbing than rocket science, say experts at Science|Business roundtable

On 23 January 2020 in Paris, Science|Business convened experts to discuss how best Europe can fill the talent pipeline for artificial intelligence and other emerging digital technologies. This is a report of the discussion, part of a series of events and publications underway as part of the Science|Business Digital Skills project.



Applying artificial intelligence and other advanced digital technologies in the real economy isn't a job for tech nerds. Instead, Europe needs more people who can combine a deep knowledge of industry sectors with some expertise in data analytics.

That was the verdict of guests at a Science|Business roundtable on digital skills, hosted by Sorbonne University's Center for Artificial Intelligence (SCAI) in Paris on 23 January 2020.

Conversations about AI's impact on the labour market often assume it will create jobs for a small elite of tech nerds, while destroying many more conventional roles. But the roundtable participants argued there will continue to be strong demand for professionals with in-depth knowledge of particular industries, supplemented by enough tech-knowhow to be able to apply the digital tools the boffins have built.

PLUMBERS CAN ADD A LOT OF VALUE

Head of digital at international nuclear engineering company Framatome, Vincent Champain, told the roundtable that in his experience only about five to ten per cent of the value extracted from business data relies on advanced scientific expertise.

The rest, he said, is much simpler: about 60 per cent is "basic plumbing," which means knowing enough to find and use the data that's relevant to the company's goals, while 30 per cent comes from fairly conventional applied mathematics, such as linear regression analysis. "It's not AI, but it works," he said. "AI is used only for very specific cases in manufacturing – materials science and physics knowledge often beat artificial intelligence."

Neither skill set is the preserve of experts, can be taught alongside other disciplines, and can be learned by professionals whose main focus is elsewhere – and who may be better placed than big data specialists or tech geniuses to deliver what the company needs.

For example, data journalism involves finding news stories in large datasets, but data expertise isn't sufficient to dig those stories out, because "the newsworthiness is difficult to code," said Nathalie Labourdette, head of the European Broadcasting Union's EBU Academy, which trains media professionals. Data skills are needed, but they're needed from journalists who can write well and know a good story when they find it.

Similarly, Mirjam van Daalen, chief of staff of the Photon Science Division at the Paul Scherrer Institut, a Swiss multidisciplinary research centre, said it is difficult to recruit staff with sufficient knowledge of specific research areas, such as scientific IT, who are also at home with data tools and AI. "We do not find the people that are trained in such a way that they understand our problems, so it's not just a matter of technology," she noted.



Mirjam van Daalen, Chief of Staff, Photon Science Division, Paul Scherrer Institut



Éric Bothorel, Member, French National Assembly

Van Daalen said people with technological expertise need a better understanding of the problems their skills are to be applied to. "The operation of the machines, the control of the machines, and then the data analysis – they are different aspects, and these people have to work together," she said. "They have to have a very good basis in their training, but they also have to get trained on-site, and this will take a long time."

'DO SOMETHING' – BUT WHAT?

Executive leadership teams also need a combination of business and technical expertise, so they can choose the right overarching strategy. The recent rapid advances in AI are prompting widespread interest in the technology, but many businesses aren't sure how to apply it in their industries. Often, when companies come to the SCAI for help in applying AI to the large datasets they hold, "they feel they can do something with this data, but they don't know what," said Gérard Biau, director of the SCAI.

The problem, added Zìed Bahrouni, CEO of Munich-based R&D firm Motius, is that too many companies pursue “AI for AI’s sake,” without thinking through what they want to achieve. He said a “let’s see what happens approach” to AI that is not lined up with a company’s strategy usually fails.

But that’s a problem of business planning, not one of tech skills: Bahrouni said that a lot of the hard science is already done when companies buy-in an AI tool from the likes of Google or Amazon.

“You don’t need deep AI skill to use it,” he said, but the really hard part is “the decision about what exactly it should do.”

Armin Ritter, head of corporate learning and development at the Fraunhofer Academy, agreed. “They [companies] need a strategy for which way they should go, and the technology and the skills which are necessary to support the strategy is the second question,” he said. Some policymakers are also alert to the challenge. “We need people who are dual thinkers, people who have technical skills and clear ideas of the business capabilities,” contended André Richier, principal policy officer for skills and advanced technologies at the European Commission.



Gérard Biau, Director, SCAI, Sorbonne University



Zìed Bahrouni, CEO, Motius

But merging the teaching of business skills and technical skills has proven difficult, he said, while those responsible for technology deployment in businesses often pursue “the next new thing,” then struggle to integrate it into systems their companies already rely on.

WHAT TO TEACH? AND HOW? AND WHEN?

Deciding how the required skills should be taught is a difficult problem to solve because what the market needs can change very quickly, meaning applied AI skills taught in school could be out-of-date by the time the students start looking for work.

Éric Bothorel, a member of the French National Assembly, said teaching basic digital skills in schools is a component of France’s national strategy for AI, but so is life-long learning. “People need to be trained continuously through their work life so they can change smoothly between jobs,” he noted.

Nuno Feixa Rodrigues, board member of the Portuguese Foundation for Science and Technology, identified two competing views of how digital skills should be taught in schools. One view is that “the curricula should be more about ICT and the specific applications, with specific ends, which are much more tangible and we can see what they can be used for.” The other is that “we should focus more on computational thinking and computer science, more about the abstract, and not so much about the application.”

But who should set the curriculum and in how much detail? Thomas Jørgensen, senior policy coordinator at the European University Association, flagged the risk of policymakers overengineering education. “I’m not a big fan of tampering with curriculum development,” he said, “because I think the [education] professionals are better at that.” Instead, Jørgensen argued that focusing on “learning outcomes” – what needs to be achieved – may be better than trying to specify from the top-down what should be in the curriculum.

‘With things changing so fast, asking what should be in the curriculum may be the wrong question, said Alistair Nolan, a senior policy analyst at the OECD’s science and technology policy division. “The machine learning of four years ago was not the same as it is today,” he added. “When you look at the whole history of prognostication about what future skills needs will be, you find that even people in the centre of the industries concerned get it wrong, time and time again.”

He gave the example of the introduction of the PC into the workplace in the 1980s: while it was clear at the time that computer skills would be important in the future, no-one anticipated the thousands of new job titles that would emerge 20 years later as a result, from web designers to database managers, much less the skills required to do those jobs.

Instead of asking what should be taught, Nolan argued a better question is how education institutions and employers can better share information about what’s needed today, and teaching can stay in-line with the current needs of the economy.

Rapporteur: Nicholas Wallace

Join the Science|Business Digital Skills Group

Many companies wrestle with trying to remove barriers to a broader deployment of digital technologies across European industries. The challenge is that there is neither sufficient awareness of the potential of these technologies in most firms today, nor is an adequate level of relevant skills and experience available.

To address this challenge, Science|Business has formed a unique group of companies, leading research universities and public sector organizations. Through a series of private and public debates and influential reports, the group will map skills gaps, collate good practices, lay out a bold but realistic vision towards the digital transformation of industry, and develop policy recommendations on the steps needed to achieve this vision.

Interested to join?

Contact:

*Carlos Härtel Special Advisor, Science|Business
carlos.haertel@sciencebusiness.net*

T: +49 173 6864 445

© 2020 Science Business Publishing International SRL
Avenue des Nerviens 79, Brussels 1040, Belgium
info@sciencebusiness.net
+322-304-7577

