Messages from the AI engine room

The German AI Angst
Germany has a special relationship with AI. Superficial knowledge and diffuse anxieties pose a threat to "AI Made in Germany"

By Kristian Kersting

"Artificial intelligence influences really everything," the German comedian Carolin Kebekus recently declared on her TV show, talking for almost eight minutes about this key technology that is already having a major impact on many areas of social and economic life. Finally! AI is discussed and explained in mass media! This is both exciting and significant because AI is still a projection surface for the so-called German Angst — the German hesitance and lack of assertiveness in what is seen as critical matters.

Unfortunately, I also experience this in politics, from which I would often like to see more support of the AI research community. Recently, for example, an expert discussion on large language models in AI at the Federal Ministry of Economics and Technology opened with the somewhat smug request that the invited researchers should please first explain why this kind of AI, which significantly influence all industrial applications — from the automotive to the pharmaceutical industry, should be funded? Well, we managed to do so, but to be honest, you do not feel really appreciated after such an entree ... By comparison: In China, top AI researchers are super stars.

Now, it is neither my dream nor that of my colleagues to sign autographs. But we do expect some basic comprehension of our research topic and knowledge of the conditions under which it is conducted. At the "Economics Day" of the Federal Foreign Office, Mr. Schnorr of the Federal Ministry of Economics complained that German AI scientists were allegedly not interested in getting their (revolutionary) ideas to market.

If that was the case, why do so many of my colleagues found start-ups or go to the big US companies? Why is a GAIA-X project proposal on "AI in administration" from two strong AI research sites in Germany — Darmstadt and Tübingen — together with the highly rated and successful German AI start-up AlephAlpha rejected without even a hearing? Why is a Rafael Laguna, head of the Federal Agency for Disruptive Innovation, complaining that we are being left behind by the UA and China in the future technologies (such as AI) while we are wasting precious time trying to comply with the Federal Budgetary Regulations?

Getting algorithms and AI presented in the evening TV program in an easy-to-understand and humorous way is a good first step towards overcoming this German Angst. Thank you, Carolin Kebekus – I would love to see more of this! Another building blocks are free, generally understandable online AI courses for everyone such as "Elements of AI" (imported to Germany from Finland by the German Chamber of Industry and Commerce) or the "AI

Campus" (various learning opportunities funded by the Federal Ministry of Research, among others), but also popular science books such as "Programming AI Yourself for Dummies" and "How Machines Learn", as well as the funding initiative "AI in Higher Education" of the Federal Ministry of Research. Let's hope that this will also close glaring knowledge gaps in Germany's industry leaders!

Just recently, Prof. Dr. Jeschke, the former Board Member for "Digitization and Technology" at Deutsche Bahn AG, announced in a FAZ podcast with a tone of conviction that AI is not just machine learning. I almost burst into tears of joy — finally someone who understands AI. Unfortunately, she went on that the other half is "reinforcement learning". That brought tears to my eyes — of despair! No, AI is not just machine learning (which covers reinforcement learning). Beer is also not just made of hop and water.

But ok, let us see what reinforcement learning is: it is about boosting desired behaviors through rewards and punishment. This process of learning goes back to the work of the psychologists Thorndike and Skinner from the first half of the last century, as every high school graduate knows, and can, which is the beauty, also be coded as algorithms.

Colleagues at Google and Stanford University, USA, have just used this insight to teach an artificial neural network to design circuits by, simply put, programming a reward strategy for placing transistors on a chip: the computer starts with an empty design and places each component, one at a time. At the end, there is a reward based on how well the design performs in terms of power consumption, performance, and so on.

After many trials, errors, and rewards, the computer learnt to design circuits in an average of less than six hours, something that takes hardware engineers many weeks to do. This helps to develop chips that speed up AI processes and, in this way, to further reduce its carbon footprint.

Overcoming the German AI Angst is important to usher in the "modernization decade" of the Christian Democratic Union (CDU) party. An "AI campus with attractive conditions" as proposed by the CDU — hopefully as a large-scale research facility at a physical location with appropriate computing power — could become the symbol of a European path to AI based on our democratic values, as demanded by the Green Party of Germany.

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