

Competences for Producing Artificial Intelligence - Granting Access in an Ethically Acceptable Way

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AI is being established throughout various sectors and has a growing impact on people's lives. Thus, this technology must perform accurately and be trustworthy (Rossi, 2018). Trust in AI goes hand in hand with trusting its designers and producers, but how can those provided access to AI production be determined? Is there an ethically acceptable way to resolve this issue? This blog post seeks to provide a potential answer to these questions by taking into consideration the following competence model consisting of four dimensions as illustrated in Figure 1.



Figure 1: The 4 Key Competences

The model presents the presumed and expected qualifications of an academically educated person (Bartosch and Hiller, 2019). Its dimensions shall be assessed according to their significance for AI production before deciding on the ethical acceptability of this approach.

The model's first dimension is *knowledge and understanding*. It describes the availability of existing knowledge in a specific field. The broadening and deepening of existing knowledge can increase the level of expertise and should be pursued (Bartosch and Hiller, 2019). Considering the growing impact of AI on various areas along with the topic's inherent complexity, a high level of proficiency of those producing this technology is a consequential prerequisite (Pannu, 2015). The ongoing and future research in the field of AI will prospectively result in new findings. Emphasizing the deepening and broadening aspect of this first dimension becomes a necessity considering future advancements in the field of AI will not allow the sole reliance on existing knowledge.

On the one hand, the dimension *use, application, and generation of knowledge* refers to the ability to conduct research and consequently generate new knowledge (Bartosch and Hiller, 2019). The significance of this competence related to producing AI solutions becomes evident in view of qualitative demands to AI, meaning that new findings help improve the overall performance of this technology. On the other hand, the dimension implies the researcher's critical understanding of knowledge (Bartosch and Hiller, 2019). Critical understanding of theoretical knowledge allows its application to problem solving (Sorko and Irsa, 2019). Thus, this dimension represents the transition of knowledge from theory to practice. The sufficient availability of this competence is critical for developing AI since implementing knowledge inadequately during production and design might lead to flaws in functionality and diminish overall quality.

The dimension *communication and cooperation* may be viewed from a social or interpersonal perspective. Bartosch and Hiller (2019, p. 16) explain that "The focus is on communication and cooperation in the context of research activities and on communication from the narrower field to a broader public." The former is applicable to producing AI and to the research necessary to do so. It can be argued that communication gains in importance depending on the level of difficulty of the executed task. Due to the high complexity of the process of producing AI solutions, there is a significant need for communication. The latter part of the statement given above seems of lesser importance when considering prerequisites for producing AI. Indeed, the technology is increasingly gaining ground, which is why the introduction of specialist language into everyday language and thus increasing the

level of understanding of technical terms among consumers might constitute an advantage. However, a lack thereof does not directly diminish the quality of the AI technology produced. The dimension *scientific self-understanding and professionalism* implies that an individual's self-competence and autonomy are decisive for the successful implementation of cognitive skills (Bartosch and Hiller, 2019). Successful application of knowledge depends on aspects such as self-management skills, the level of productivity, the ability to self-motivate, the will to work, and skills for communicating and cooperating (Sorko and Irsa, 2019; Bartosch and Hiller, 2019). This dimension describes the sum of all personality traits and dispositions which influence work attitude (Schmidt-Rathjens and Sonntag, 2004). Such traits are dependent on one's view of their work. Private consumers, businesses, and industries rely on the quality of the AI technologies in use. AI producers and designers need to be aware of their work's significance in order to successfully implement this competence.

All four dimensions of the competence model can be applied to the topic of AI design and production. Setting the focus on one of the four dimensions alone may not be a reliable or sufficient approach to determine who should be granted access to producing AI since it is the combination of all four dimensions that promises the most success. If objectivity is given, taking into account a sufficient presence of all four dimensions, the process of selecting those allowed access to producing this technology is ethically acceptable. Finally, another question arises in this context. Who should be given authorization to carry out such assessments and determine those suitable to work with AI? This could and should be the topic of future discussions and analyses.

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