Bias-Error in Artificial Intelligence

Imagine the following scenario ...

… an artificial intelligence decides for you after elementary school which secondary school you should attend (and consequently which career path you will then take)!

This artificial intelligence tries to find the right school in your environment based on your previously determined talents, characteristics such as gender and origin, interests and your intelligence.

To do this, a large number of these factors have to be fed into a program as data from as many students as possible. In this way, these can be linked to each other and the most accurate result possible can be achieved for you.

But suddenly this AI system decides that you should go to a technical school, even though you never wanted to! What happened there?

Task 1: Imagine exactly that happened to a good friend of yours and an AI algorithm mistakenly wants to send her to the wrong school.

- - Collect as many traits as possible in groups that this friend could have (where does she live, what does she like to do, what character traits does she have ...)
- - Now write down which prejudices can be related to these characteristics (e.g. women in technology, lives in a poor / rich neighborhood, is chaotic, wears glasses, is blonde ...)
- - Which school do you think the poorly programmed algorithm would send your girlfriend to? Which school would you like to send them to?
- - What would have to happen so that the AI program doesn't make the same mistake again?

It is possible that mistakes will creep in while collecting the large amount of data. Perhaps there are already students who are very similar to you, who, for example, are similarly smart, like to solve logical tasks and are very social. After these kids all wanted to go to a technical school, the AI decides that you want to go to a technical school as well.

Such errors are called bias errors. They happen when prejudice creeps into program data sets.

Task 2: In small groups, think about what you could do to avoid any Children are more likely to be sent to the wrong school. How can so-called Bias errors be avoided?
Remember: where does all this data come from? Who decides which data will be used?
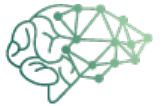
Such algorithms already exist in the real world. For example, artificial intelligence is used to decide whether a person receives a loan. The program evaluates these people based on their age, earnings, and place of residence.
If, however, many people in a neighborhood already have high debts, the program could decide that the person applying for a loan would get less money even though they have no debts.

So you see: it is incredibly difficult to develop a decision algorithm that takes all probabilities into account and makes decisions as fairly as possible based on the data fed in.
So these programs only "think" as fairly as the people who teach them these decisions. In addition, the saying is often used: **„Garbage in, garbage out".**

What are bias errors?

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What examples can you think of?

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What types of bias errors are there?

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