
Dependable Systems

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Sarah Sterz, Kevin Baum, Prof. Holger Hermanns

Training Exercises PT7 (Argument Assessment, Pseudo-Reasoning and Fallacies)

with Example Solutions

Issue 1: *Rational Persuasiveness*

Last time, you reconstructed the below arguments. Now assess these arguments, i.e. charitably reconstruct them (if you have not already done so), and comment on their rational persuasiveness.

(I) The autonomous car in the modified trolley case from the lecture ought always to minimize the number of deaths in such situations. If this was not true, it would be right to produce a technology knowing that it will, at some point, kill more people than necessary. But that cannot be right. Therefore, autonomous cars ought to minimize the number of deaths in such situations.

(II) Study after study confirms what is long known: the gender pay gap is a real thing. Recently a sector that was not in the media's focus so far made its way into the spotlight of pay gap reports. Women in the IT sector, one of the stereotypically male domains, suffer from the gender pay gap, too. In the tech industry, there is an adjusted wage gap of 5.4 percent, meaning that a man gets, on average, 5.4 percent more wage that a woman in a similar position. This is not only unfair, but counterproductive for the whole sector. The tech industry is taking all kinds of measures to attract more women, so it would be only logical to pay them as well as their male colleagues. There is a strong culture among tech folks that values skill and competence above all. If you are a talented programmer, a clever researcher or a good engineer, you will be held in high esteem. Which gender you have will usually become unimportant as soon as people get to know you and it should be equally irrelevant for your payslip.

(III) Algorithms pervade our lives today, from music recommendations to credit scores to now, bail and sentencing decisions. But there is little oversight and transparency regarding how they work. Nowhere is this lack of oversight more stark than in the criminal justice system. Without proper safeguards, these tools risk eroding the rule of law and diminishing individual rights.

(taken from Jason Tashea, "Courts Are Using AI to Sentence Criminals. That Must Stop Now", 2017, in *Wired*, `https://www.wired.com/2017/04/courts-using-ai-sentence-criminals-must-stop-now/`)

(IV) Once a [crime] pattern is detected, the information can be used to predict, anticipate and prevent crime. [...] Machine learning can be a tremendous tool for crime pattern detection, and for predictive policing in general. If crime patterns are automatically identified, then the police can immediately try to stop them. Without such tools, it could take weeks or years of [manually] sifting through a database to discover a pattern, or it might be missed altogether. [A certain machine learning approach] provides an important data-driven approach to a very hard problem in predictive policing. It's the first mathematically principled approach to automated learning of crime series.

(taken from Cynthia Rudin, "Predictive Policing: Using Machine Learning to Detect Patterns of Crime", 2013, in *Wired*, `https://www.wired.com/insights/2013/08/predictive-policing-using-machine-learning-to-detect-patterns-of-crime/`)

(a) Bring the argument into tabular form.

(b) Bring your tabular form into logical form.

Issue 2: ***Being fallacious***

Get together in your discussion group. Write a short text on a topic of your choice and try to include as many fallacies as possible, but also make sure that they are not too obvious. Exchange your texts and try to find the fallacies that the others have hidden in their texts.

Issue 3: ***Another fallacy?***

Reconstruct the following argument:

> It is entirely possible, that some refugees are actually terrorists. Therefore, it is also entirely possible that all refugees are terrorists.

Is the way you reconstructed it valid? Is it sound? Hint: take a look at the following argument:

> It is entirely possible, that some paintings are actually counterfeits. Therefore, it is also entirely possible that all paintings are counterfeits.

Issue 4: ***Fallacy vs Pseudo-Reasoning***

We made a distinction between fallacies and pseudo-reasoning. Which of the instances of bad ways of argumentation shown in the lecture are instances of pseudo-reasoning and which of fallacies?

Issue 5: ***Cute Fallacies***

Read this very short book: `https://bookofbadarguments.com/?view=allpages` (Yes, this is the whole exercise. It's just a cute and educational book and very worthwhile.)

Issue 6: ***Data Fallacies***

There are not only argumentative fallacies, but there also are data fallacies. Study them here: `https://www.geckoboard.com/learn/data-literacy/statistical-fallacies/` Do they have analogous argumentative fallacies? Discuss in your group.