Learning From Mistakes

The practices of designing a prediction for the uses of automation and assistance are often confused as being identical. When a prediction is used for automation it acts as a decision rule: turning observable inputs into a final decision which is then put into practice. In contrast, an assistive prediction attempts to provide information to an autonomous decision-maker in hopes that they will prevent the decision-maker from committing would-be errors without eroding their properly taken decisions. In this way a decision rule wants to act as a substitute for the information a decision-maker stores while the assistive prediction wishes to acts a complement. This distinction suggests different knowledge basis from which the prediction should build.

While a decision rule needs to perform well (or at least well on average) over the entirety of a domain to be considered a success, the information contained in an assistive rule only needs to switch the decision-makers mistaken choices to accurate ones. By identifying a population over which the decision-maker commonly makes mistakes and limiting interventions to those regions, an assitive tool raises the fraction of opportunities it engages with where it has potential to make a positive impact. Similarly by building off problem instances similar to those the decision-maker was unable to perform on, the decision rule builds on a complementary set of knowledge, in a sense learning the part of the problem the decision-maker does not understand.

Model

Experiment

1. Participants will evaluate a set of 25 profiles from the dataset X making decisions Y on them.

2. Based on the differences between the relationship between the true outcome of

3.