Analysing A/B Testing Results Using a Fisher's Exact Test

A/B testing is a method of comparing variants of an application against each other to support decision making in practice. A/B adapts randomized controlled experimental methodologies to software delivery. One or more variants of a page are shown to users at random, and an analysis (typically based on statistical hypothesis testing) is used to determine which variant performs better or worse for a given concrete metric. In this lab, we will use Fisher's exact test to report the outcome based on given results of an A/B testing experiment.

1   Write a script to run Fisher's Exact Test

Erth, a new start-up, wants to modify the "Get Started" button on their landing page to a new design. They perform A/B testing with two variants of the button - A & B. The visitors were randomly shown variant A or variant B and they tracked whether each user clicked the button or not. The results of the test can be downloaded from: **https://tinyurl.com/ecse437-lab5**.

Write a script called "fisher_test.[py|rb|<ext>]" that will read the experiment_results.csv file, run a Fisher's exact test on the data and print the p-value returned by the test.

In addition, print a message indicating whether the result is statistically significant (i.e., the clickthrough rate for Variant A is significantly different than that of Variant B).

Note: We recommend using a high level scripting language such as python or ruby for this exercise, as some math functions needed can be tricky to implement in shell script. You can choose a programming language of your choice.

2   Deliverables

For grading, you must submit a zipped up copy of "fisher_test.[py|rb|<ext>]" and a readme containing requirements to run your script through mycourses. The complete exercise is due at 11.59PM ET on November 25, 2020 (Wednesday).

Grading Scheme

Part of Exercise	Marks
Puppet code:	/50
Functional correctness	30/50
Design of the solution	10/50
Style	10/50
Total Marks:	/50