**Differential Tests**

**Introduction**

* Differential Test: Comparing the prediction of two models and checking if the change is significant or not
  + The significance of the change is defined by the business. For example, some business may consider accuracy to be extremely import, so even small changes matter

“lets have a look”

**Setting up Differential Tests**

* Show ml\_api\differential\_tests\test\_differential.py
  + pytest.mark.differential to mark is a special type of test
  + 19 – We are loading the results of previous predictions
  + 25 – We are generating a series of predictions in the same rows
  + 45 – For each value predicted, we check if they are more different than our 5% threshold. If there is more than 5% difference, we then fail the test
* Show circleci\config.yml
  + py.test -vv packages… used to not call that test
* Show regression\_model\regression\_model\config.py
  + 74
* Show ml\_api\tests\differential\_tests\capture\_model\_predictions.py

**Differential Tests in CI Part 1**

* Show circleci\config.yml
  + 99 loads the previous model version by installing from a different requirements file
  + 105 loads the current model by installing from the current requirements
  + 106 runs the differential tests (*-m differential* selects only differential tests)
* Show ml\_api\diff\_test\_requirements.txt
* Show ml\_api\tests\capture\_model\_predictions.py
* Show ml\_api\tests\differential\_tests\test\_differential.py
* Show regression\_model\regression\_model\VERSION

**Differential Tests in CI Part 2**

* Steps:
  + First step: Publish the updated model
  + Second step: Our API specifies that updated model
* The last step to publish is not showing because of our filter