

# PROJECT 44: MIXED STATE DISCRIMINATOR

---

Aziz NGOUEYA

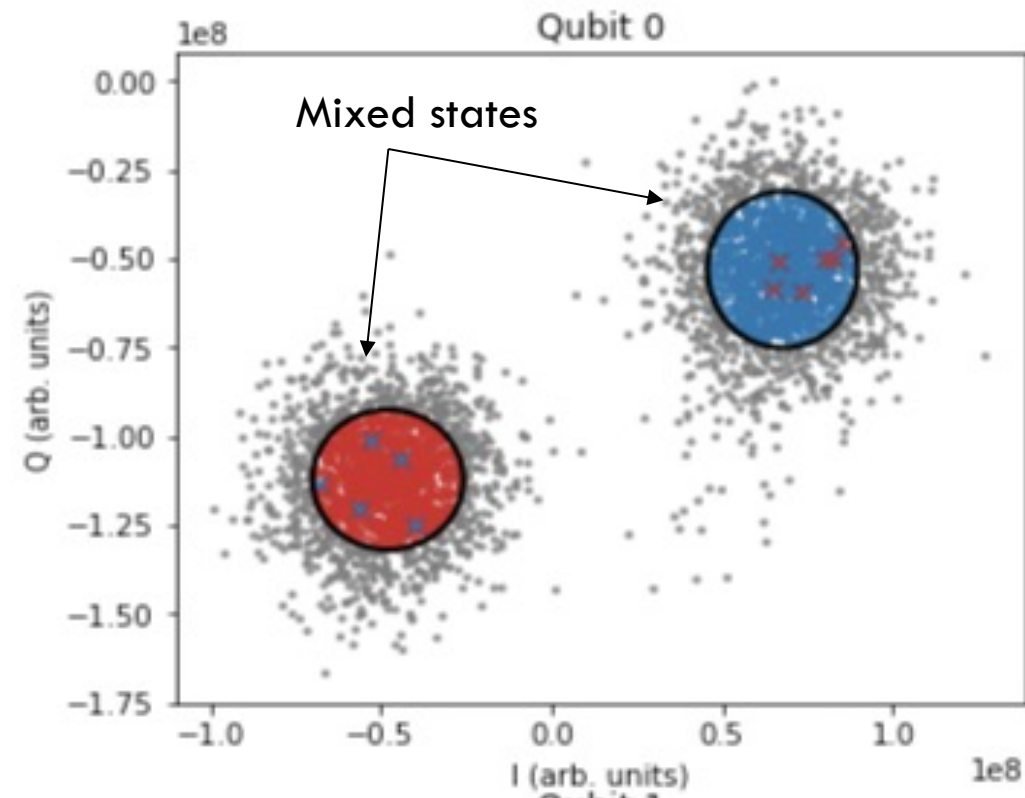
mentor: Helena ZHANG

# DESCRIPTION

- The standard discriminator separates only  $|0\rangle$  and  $|1\rangle$  states
- The Mixed discriminator outputs are 0 and 1 but also a mixed state.
- The Mixed state is a probability vector over the possible outcomes( 0 and 1)
- Various ways to implement it.

Why is this useful?

- Comparing the results with the standard discriminator
- Measurement error mitigation



# DELIVERABLE

Pull request on ignis module to take into account the mixed state discriminator

Qiskit / qiskit-ignis

Watch

21

Star

139

Code

Issues 40

Pull requests 5

Actions

Security

Insights

master

qiskit-ignis / qiskit / ignis / measurement / discriminator /

Go to file

Add file

...



mtreinish and chriselectic Make scikit-learn an optional dependency (#524)

✓ d6f1ad7 12 hours ago History

..

\_\_init\_\_.py

Add measurement module to import path (#382)

12 months ago

discriminators.py

Copy pylint config from terra (#370)

11 months ago

filters.py

Unblock CI by updating jupyter\_sphinx and pinning ddt (#401)

11 months ago

iq\_discriminators.py

Make scikit-learn an optional dependency (#524)

12 hours ago

# PROGRESS

- Implementing a discriminator based on the distance to the centroids.

- Construct a mixed state distribution using a gaussian Mixture.

Next steps:

- Adapt my code with ignis Class.
- Find a suitable format for mixed states.

