

Mainidea

- Define action a to be $Q^{(2)}[r^{(1)}]$ as a function of the response $r^{(1)}$

Definition

Using Bayes risk over bounds, argue that loss is close to 1 in expectation

- Second round query doesn't have a large information about (u, v) as well

• Inducting Bayes risk

$$L(u,v), Q^{(2)}[r^{(1)}] = 1[||Q^{(2)}[r^{(1)}] \cdot (u \otimes v)||_2^2 < \text{some value}]$$

3

7

Main idea

- Define action a to be $Q^{(2)}[r^{(1)}]$ as a function of the response $r^{(1)}$
- Define loss function

$$L((u, v), Q^{(2)}[r^{(1)}]) = 1[\|Q^{(2)}[r^{(1)}] \cdot (u \otimes v)\|_2^2 < \text{some value}]$$

- Using Bayes risk lower bounds, argue that loss is close to 1 in expectation
- Second round query doesn't have a large information about (u, v) as well
 - Induct using Bayes risk

My other works

- **Classic**

- Ridge Regression [KW '20], [KW '22]
- Dimensionality Reduction for Sum-of-Distances [FKW '21]
- Reduced Rank Regression [KW '21]
- Fast and Small Subspace Embeddings [CCKW '22]
- Fast training of Transformers via Sketching [KMZ '23]