

Qual Bench AI

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Catalog

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Implementation Plan

Qualcomm's AI Hub is host to many Computer Vision models

For a developer looking to use one, it is a daunting task to work through all of them and figure out what works best for their project.

28 models



Conditional-DETR-ResNet50

Transformer based object detector with ResNet50 backbone.

Object Detection



3D-Deep-BOX

Real-time 3D object detection.

Object Detection



DETR-ResNet101

Transformer based object detector with ResNet101 backbone.

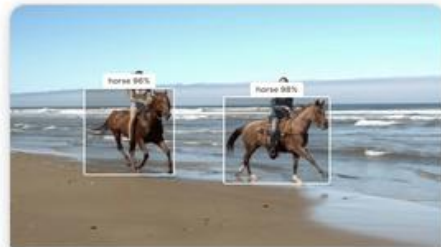
Object Detection



DETR-ResNet101-DC5

Transformer based object detector with ResNet101 backbone (dilated C5 stage).

Object Detection



DETR-ResNet50

Transformer based object detector with ResNet50 backbone.

Object Detection

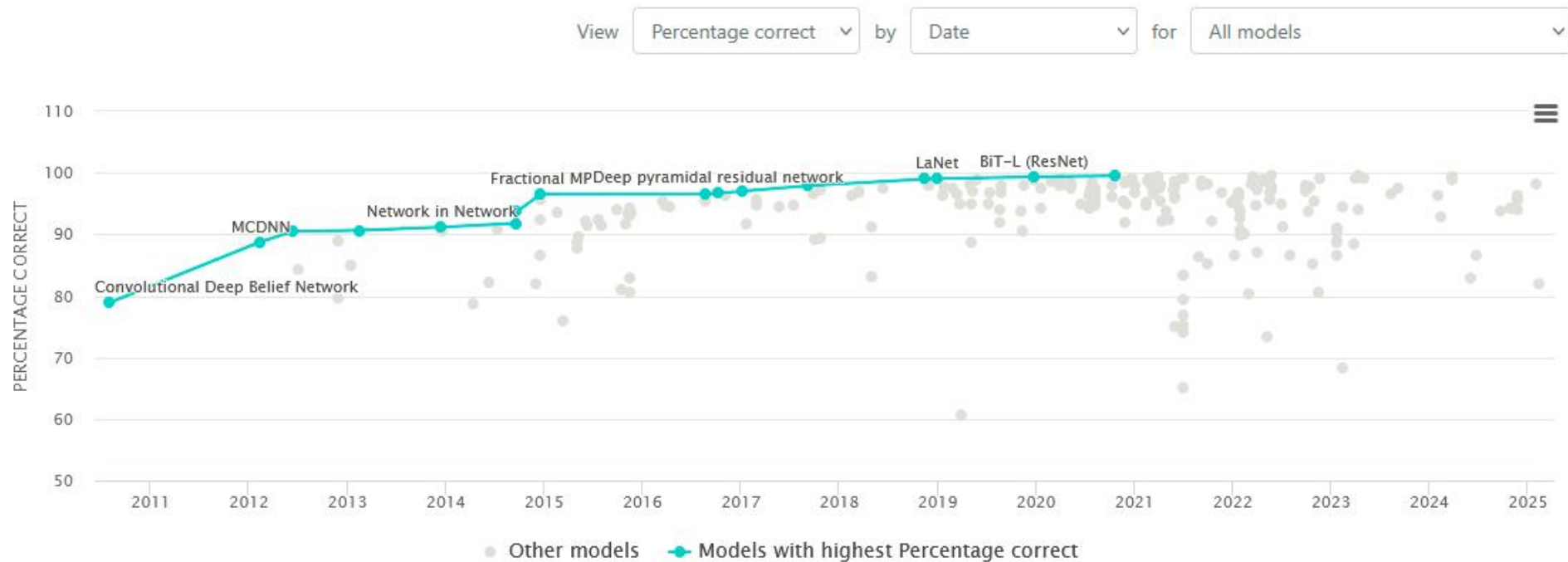


DETR-ResNet50-DC5

Transformer based object detector with ResNet50 backbone (dilated C5 stage).

Object Detection

Using PapersWithCode's graphs as inspiration, the goal of this project is to provide a service to make the process of selecting a model to use much simpler on a developer who is not already intimately familiar with the available options.





Sorting & Filtering

Allows users to re-sort the chart by a chosen metric. Enables filtering by different metrics or standard.



Database & Security

Stores all benchmark results in a secure database. Validates and stores benchmark results before user access.



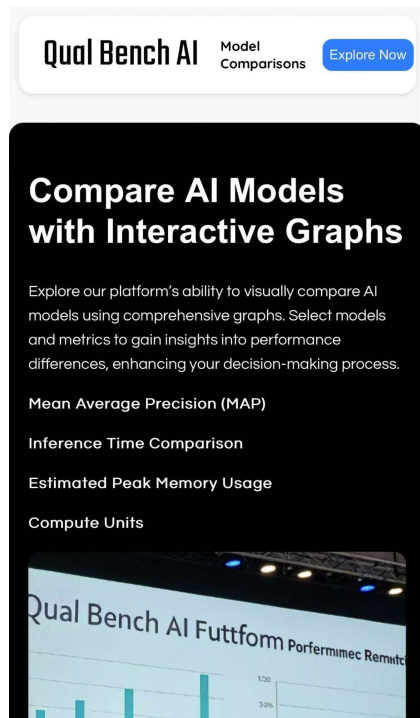
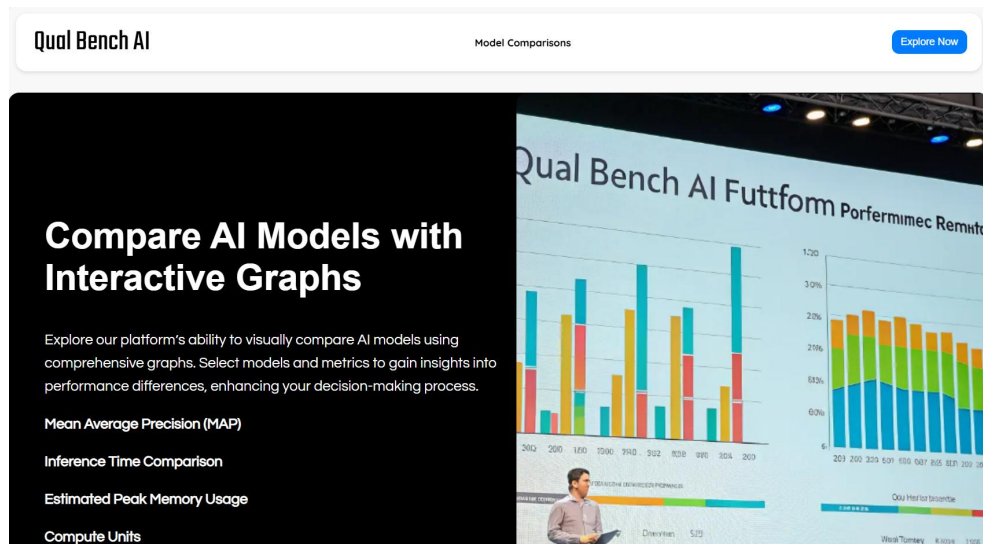
Model Ranking & Display

Displays a ranked bar chart of all object detection models



Comparison & Details

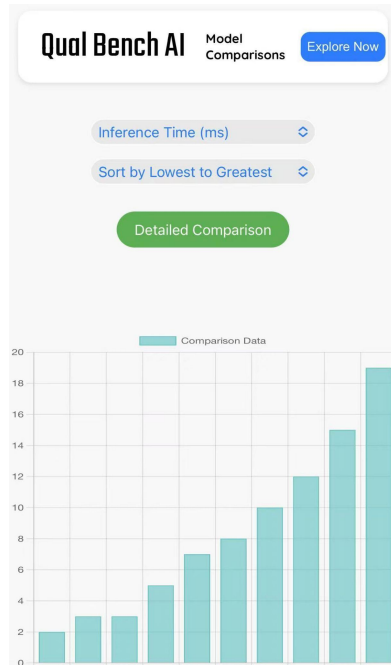
Supports side-by-side comparison of two selected models. Clicking a model shows detailed benchmarks

**Mobile Ver.****PC Ver.**

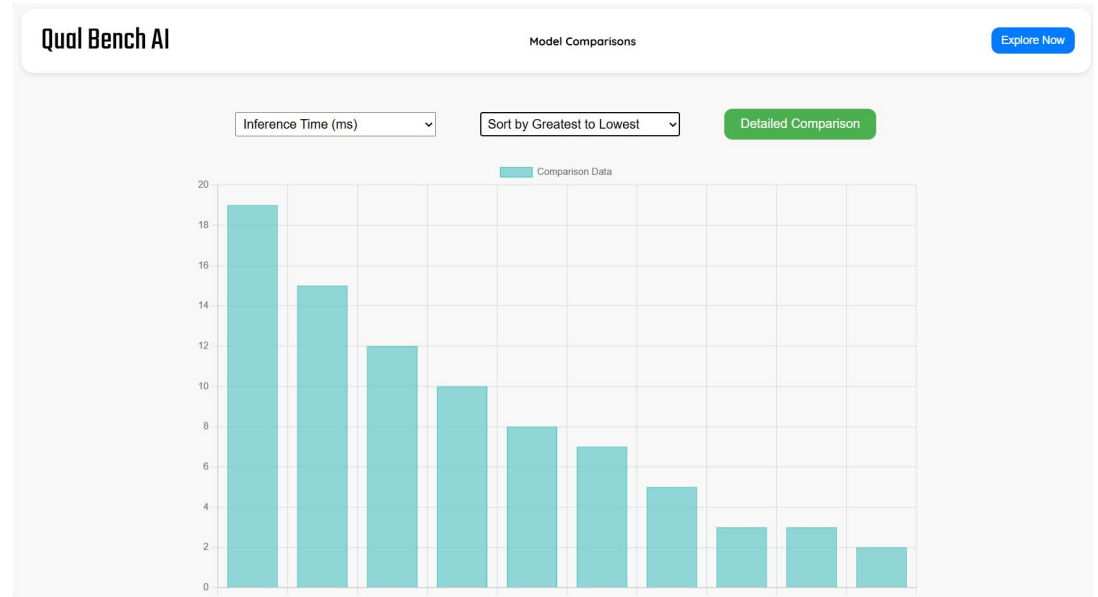
Inputs

- "Qual Bench AI" Logo
- Model Comparison
- Explore Now

The Home Page



Mobile Ver.



PC Ver.

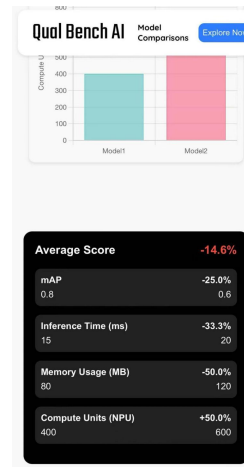
Model Comparison Page - Group

A barchart comparing all of the models. The User can updates the barchart live based on the selection of desired performance metric and sorting preference.

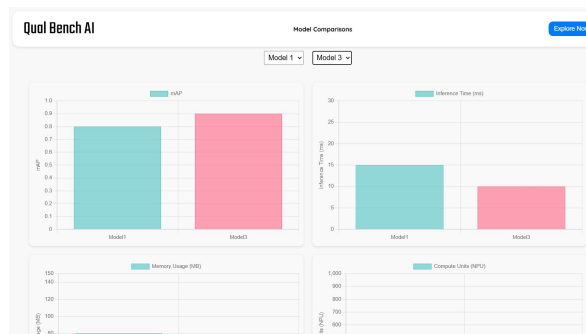
Mobile Ver.A



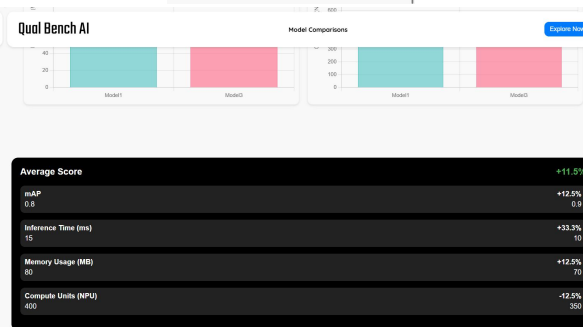
Mobile Ver.B



PC Ver.A

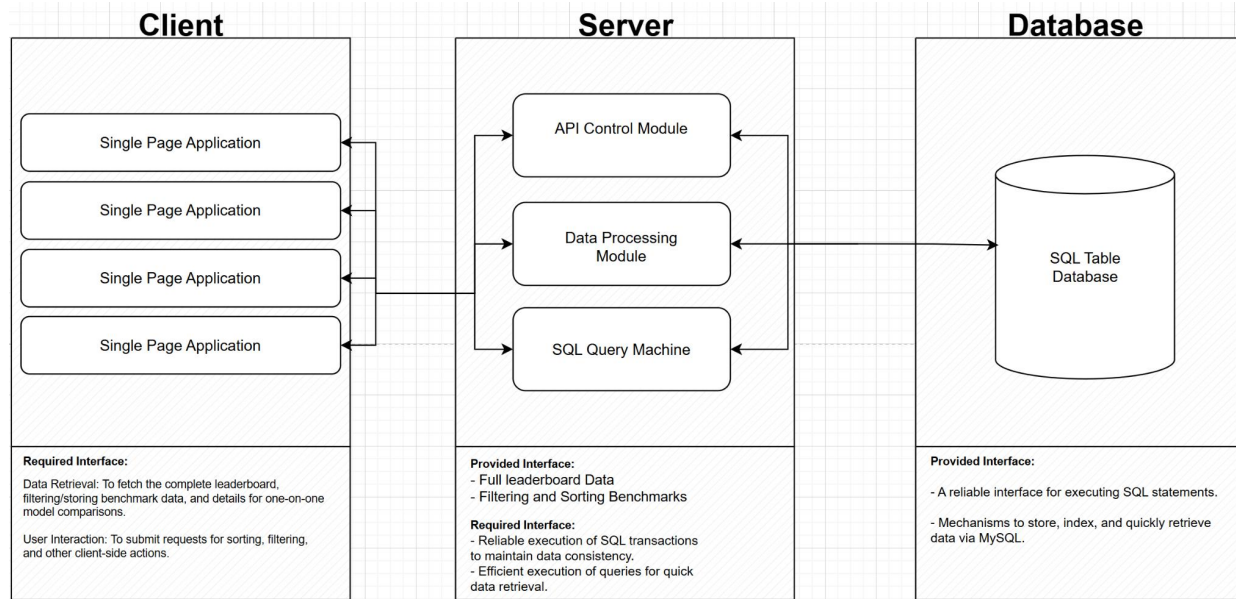


PC Ver.B



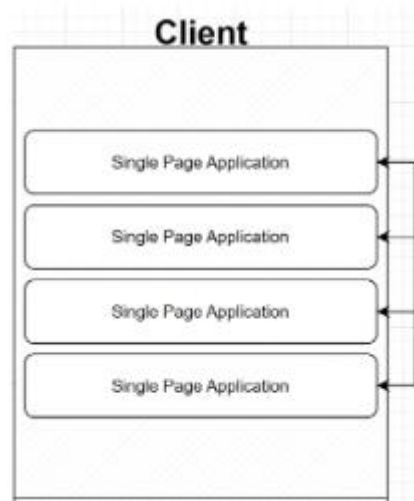
Model Comparison Page - Detailed

Provides a side by side comparison of 2 user selected models on all metrics. In both graphical and numerical charts

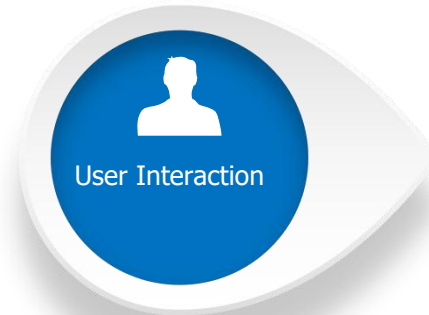


3 Major Components - The User Client, Server, and backend SQL Database

Purpose:



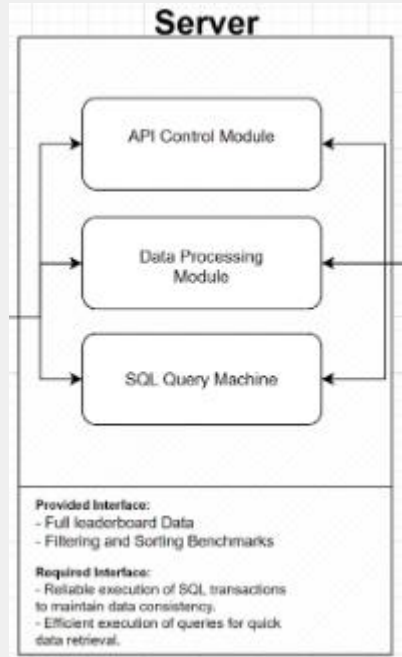
Acts as the web interface for users to interact with the benchmark website.
Allows users to filter benchmark data.
Provides visual representations in the form of charts and tables.



Fetch requested data on models and devices.



Allow users to filter and sort data based on input.



Purpose

Requests information from the database.
Processes data based on user-provided filters.

Serves the processed information as a webpage to the User Client.

Required Interface:

Executes SQL queries to retrieve benchmark data from the backend database.

Provided Interface:

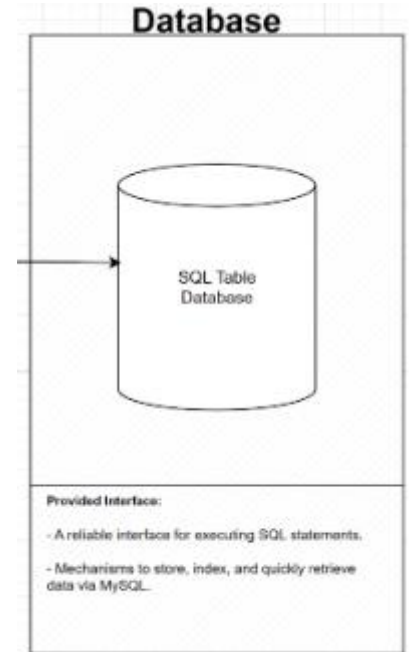
A server that responds to web requests.
Delivers the requested data in an organized and readable format.

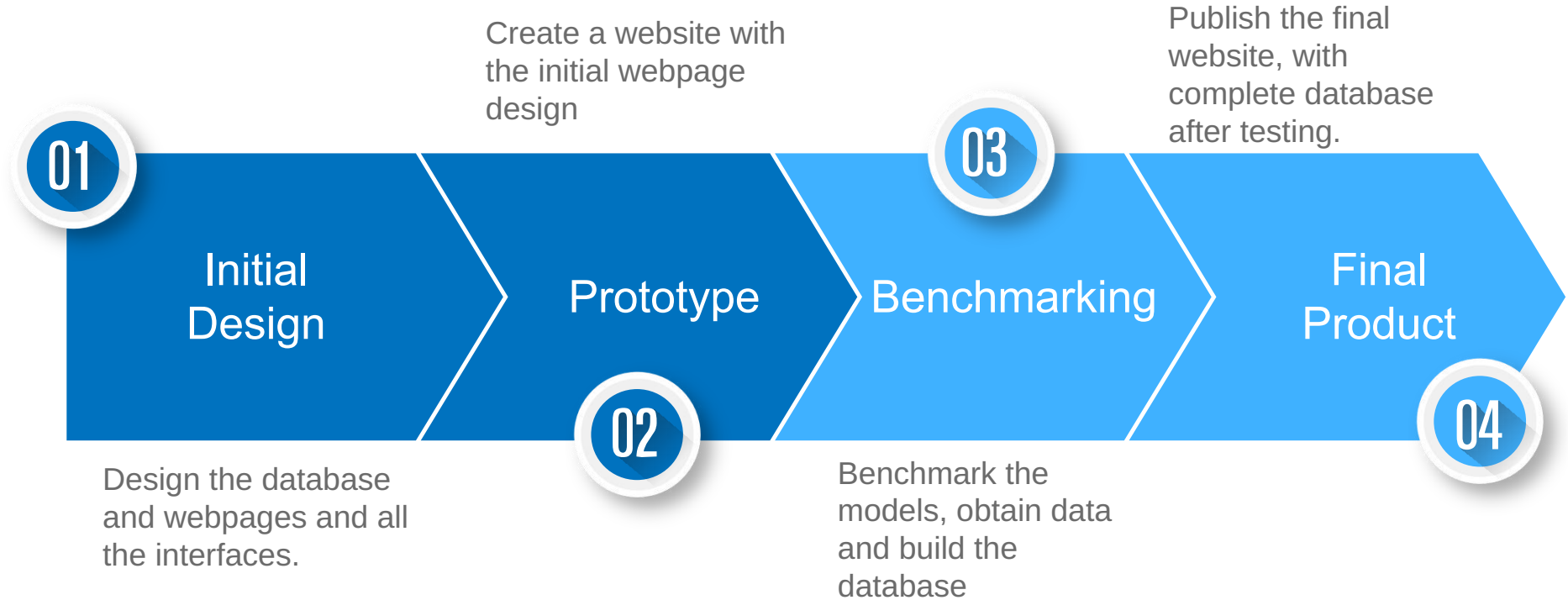
Purpose

Stores and serves benchmark data for all object detection models.
Maintains data with respect to each device and runtime.

Provided Interface

Allows benchmark data requests based on model, device, and/or runtime criteria.

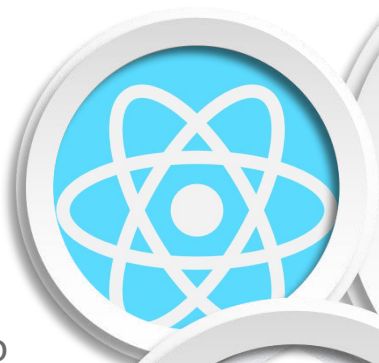




Front-End Development

React.js

A JavaScript framework to build our website upon.



JavaScript

The main programming language for the front-end website



Chart.js

To enhance data representation through informative charts and graphs.

Back-End Development

Python

The main programming language for the back-end server



Flask.py

Lightweight framework using Python to manage API integration and application logic.



MySQL

A relational database to store datasets and model metrics.



Qualcomm AI-Hub

An all-in-one repository for compiling, inference, and profiling AI models



THANKS!

Any Questions?

