

# Freeway Data Quality



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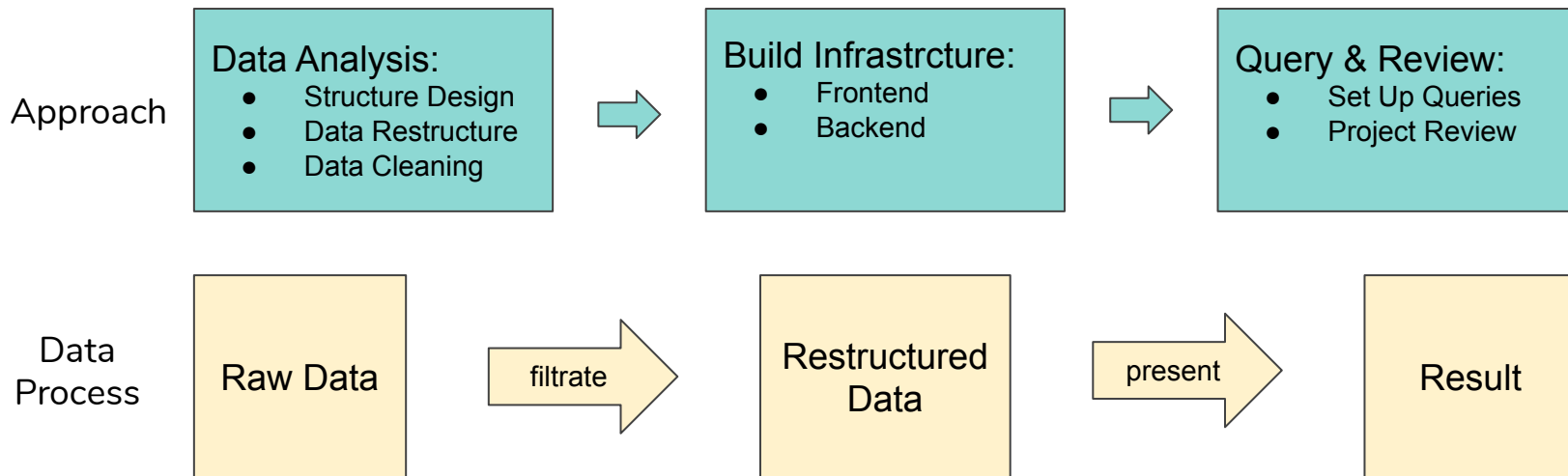


# Project Goal

- ★ **Determining the malfunctional detector, by analysis the data from highway dataset**
- ★ **Dashboard of speed detectors information: location, statistics, etc.**
- ★ **Language: JavaScript, Python**



# Project Development



MongoDB Compass - localhost:27017/freeway.highwaydata

Connect View Collection Help

Local

freeway.highwaydata Documents

freeway.highwaydata

DOCUMENTS 274.7k TOTAL SIZE 29.6MB AVG. SIZE 113B INDEXES 1 TOTAL SIZE 2.4MB AVG. SIZE 2.4MB

Documents Aggregations Schema Explain Plan Indexes Validation

ADD DATA VIEW

Displaying documents 1 - 20 of 274739

#	highwaydata	_id ObjectId	starttime Date	detector_id Double	speed Double	volume Double	traveltime Double
1		5efb31ac400739adc35a495e	2020-01-01T00:00:00.000+00:00	102151	52.83	9815	0.78
2		5efb31ac400739adc35a495f	2020-01-01T00:00:00.000+00:00	101755	44.76	2901	1
3		5efb31ac400739adc35a4960	2020-01-01T00:00:00.000+00:00	102202	41.99	1640	3.04
4		5efb31ac400739adc35a4961	2020-01-01T00:00:00.000+00:00	102207	50.37	6956	0.79
5		5efb31ac400739adc35a4962	2020-01-01T00:00:00.000+00:00	100871	67.24	14786	1.14
6		5efb31ac400739adc35a4963	2020-01-01T00:00:00.000+00:00	100634	42.36	1058	47.46
7		5efb31ac400739adc35a4964	2020-01-01T00:00:00.000+00:00	100955	60.05	9460	0.68
8		5efb31ac400739adc35a4965	2020-01-01T00:00:00.000+00:00	102309	50.42	19633	0.71
9		5efb31ac400739adc35a4966	2020-01-01T00:00:00.000+00:00	100390	50.79	13614	0.31
10		5efb31ac400739adc35a4967	2020-01-01T00:00:00.000+00:00	100872	72.32	5456	1.06
11		5efb31ac400739adc35a4968	2020-01-01T00:00:00.000+00:00	5744	60.55	7908	0.5
12		5efb31ac400739adc35a4969	2020-01-01T00:00:00.000+00:00	100685	59.31	16050	0.68
13		5efb31ac400739adc35a496a	2020-01-01T00:00:00.000+00:00	102308	54	23933	0.77
14		5efb31ac400739adc35a496b	2020-01-01T00:00:00.000+00:00	102208	62.8	11449	0.74
15		5efb31ac400739adc35a496c	2020-01-01T00:00:00.000+00:00	5646	1.07	1959	91.96
16		5efb31ac400739adc35a496d	2020-01-01T00:00:00.000+00:00	101073	65.1	6310	0.44
17		5efb31ac400739adc35a496e	2020-01-01T00:00:00.000+00:00	102209	51	12	1.07
18		5efb31ac400739adc35a496f	2020-01-01T00:00:00.000+00:00	100954	62.72	16827	0.74
19		5efb31ac400739adc35a4970	2020-01-01T00:00:00.000+00:00	5743	64.68	12749	0.53
20		5efb31ac400739adc35a4971	2020-01-01T00:00:00.000+00:00	100391	56.23	20390	0.5

Data Source: <https://portal.its.pdx.edu/home>



## **Data Restructure**

- Convert relational data into nosql format
- Pre-process the Data

```

//getTravelTime(req,res)
app.get("/traveltime/:location/:starttime?/:endtime?",async(req, res,next)=>{
    //getTravelTime(req,res)
    res.send(await getTravelTime(req,res))
});

//Station location(req,res)
app.get("/lat/:location",cors(),asyncHandler(async(req, res,next)=>{
    res.send(await getStationLocation(req,res))
}));

//All the station name
app.get("/station",cors(),asyncHandler(async(req, res,next)=>{
    res.send(await getStationGeneralInfor(req,res))
}));

//get station details
app.get("/details/:location",cors(),asyncHandler(async(req, res,next)=>{
    res.send(await getStationDetails(req,res))
}));

// Get all the id station volume
app.get("/volume/:location/:starttime?/:endtime?",cors(),asyncHandler(async(req, res,
    res.send(await getStationVolume(req,res))
}));

//Get total average speed and total volume
app.get("/sv/:location/:idlist/:starttime?/:endtime?",cors(),asyncHandler(async(req,
    res.send(await speedAndVolume(req,res))
}));

// Over speed in one station in period time
app.get("/speed/:idlist/:starttime?/:endtime?",cors(),asyncHandler(async(req, res,ne.
    res.send(await getOverSpeed(req,res))
}));

```



# Project Demo



# Lesson

- Not only data itself tell us the fact, whether data exist itself also tell us the fact
- Relational data convert to NoSQL data takes time, and the barrier between them reduce the efficiency of data processing
- Two stage require most coding: data processing & data presenting
- BTW: Working on something complex enough that we were forced to quickly learn new things



# Thank You



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# Reference

Project GitHub: <https://github.com/data-science-pdx/freeway-analysis>

Data Source: <https://portal.its.pdx.edu/home>