

The Asilomar Report on Database Research

Inder Preet Singh
Machine Learning Researcher, IQBiT

About

Group of 16 database system researchers met there to

- Analyze
- Report



Outline

- Recommendations
- Driving Forces
- Research Areas
- Grand Challenge

DeltaX

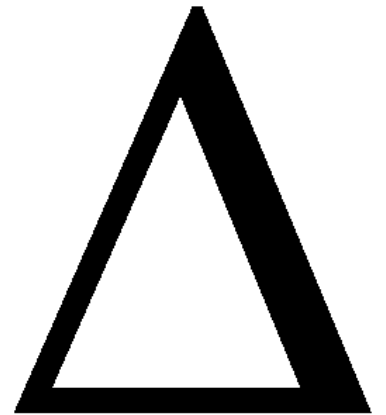
Till now there was DeltaX trend in database research.

So, what is it?

- Name
- Incremental

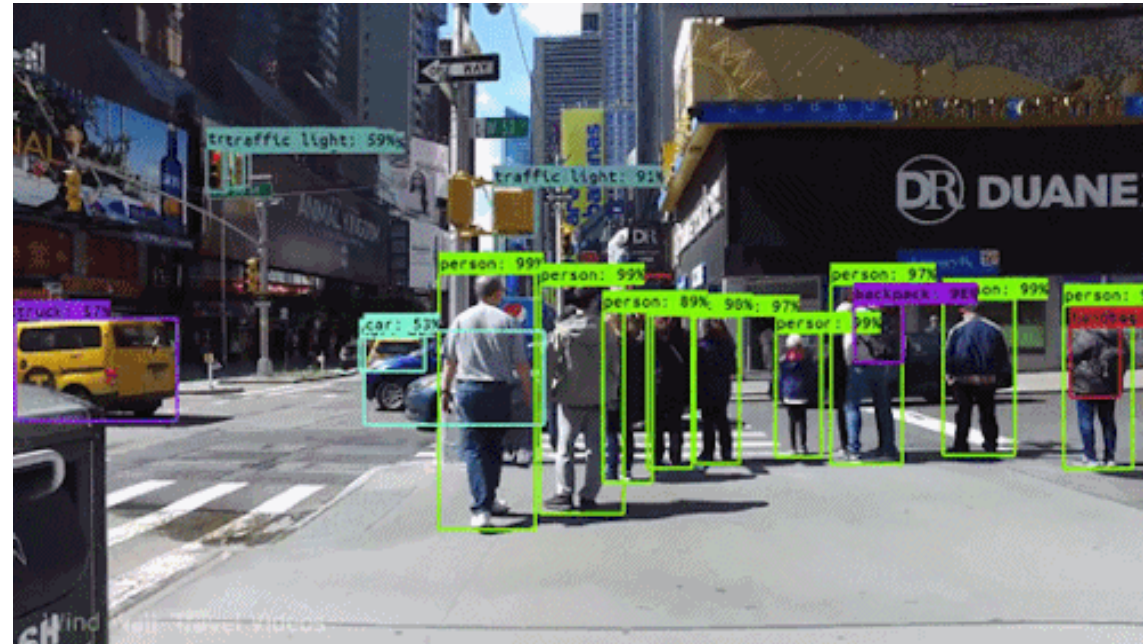
Why is it a concern?

- Short term
- Forward looking research



AI-Hard Problems

- Short Term: Object Detection



- Long Term : Object Detection through partial view

Recommendations

- Redirection
- Conferences Organisation
- New Ideas

Driving Forces

1. Web
2. Complex Environment
3. Hardware Advancements

WEB

Low content creation cost

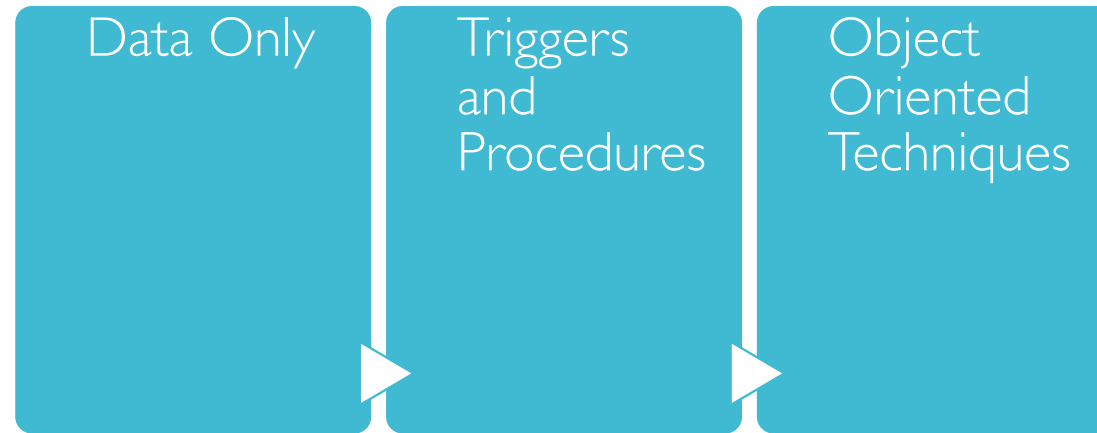
Issues:

- High End Web Servers
- Ecommerce Servers
- File System technology

Future Areas:

- Dynamic Content Publishing
- XML
- Automation

Complex Environment

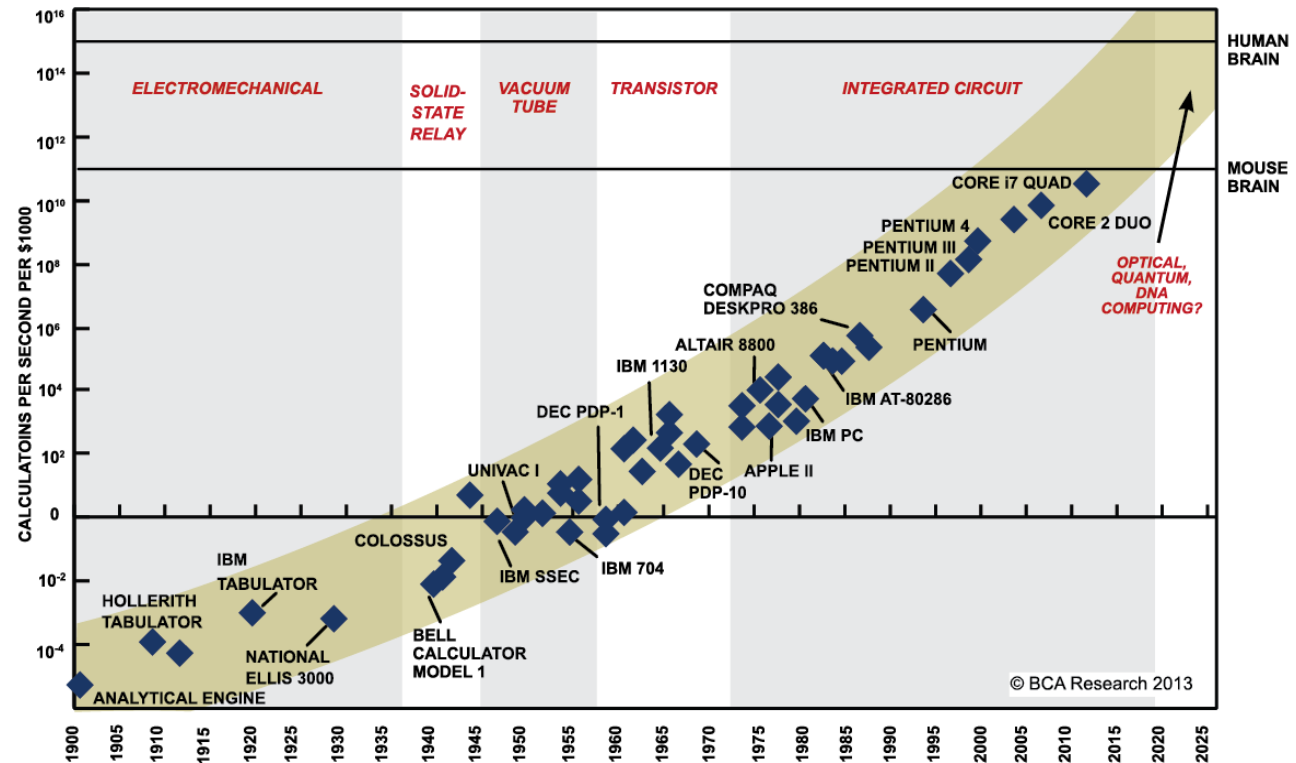


Issues:

- Repositories
- Large Scale Enterprises

Hardware Advances

- Moore's Law



SOURCE: RAY KURZWEIL, "THE SINGULARITY IS NEAR: WHEN HUMANS TRANSCEND BIOLOGY", P.67, THE VIKING PRESS, 2006. DATAPPOINTS BETWEEN 2000 AND 2012 REPRESENT BCA ESTIMATES.

Hardware Advances

- Limited Scope of Moore's Law in next decade.

Hardware Advances

Issues

- Scalability and Availability
- Gadgets
- Automation
- Parallel Processing

Hardware Advances

T	T''
Read (X) $X := X * 100$ Write (X) Read (Y) $Y := Y - 50$ Write	Read (X) Read (Y) $Z := X + Y$ Write (Z)

Driving Forces

1. Web
2. Complex Environment
3. Hardware Advancements

Research Agenda

1. Plug and Play Database Management Systems
2. Federate Millions of Database Systems
3. Smart-Data Unify Process
4. Integration

Plug and Play Databases

Focus on two aspects:

1. Gadget Databases



Plug and Play Databases

Focus on two aspects:

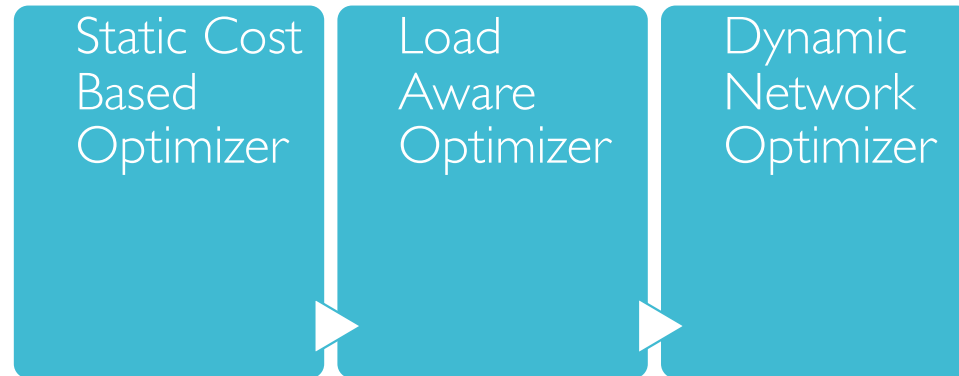
1. Gadget Databases
2. Information Discovery



Federate Millions of Database Systems

Focus on three main challenges:

I. Query Optimizers



Federate Millions of Database Systems

Focus on three main challenges:

1. Query Optimizers
2. Execution of Queries

"Good restaurants within 5 miles?"



Federate Millions of Database Systems

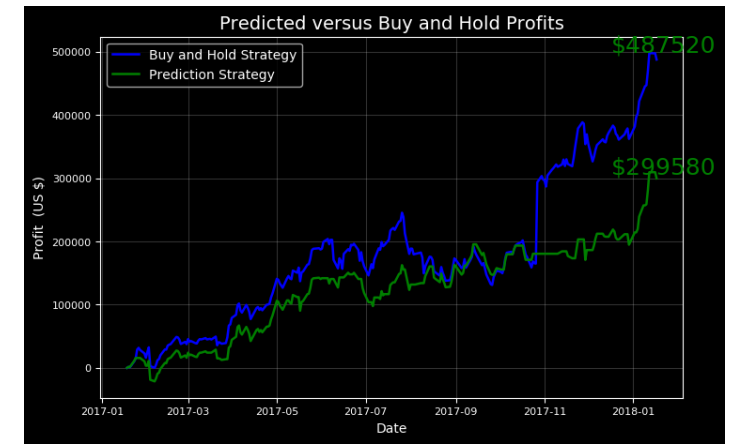
Focus on three main challenges:

1. Query Optimizers
2. Execution of Queries
3. Integration Tools

Unify Process and Data

To built logic in database system. We should focus on:

- I. Model as workflow
 - Collection of Triggers and Procedures
 - Scaling up to thousands of triggers



Unify Process and Data

To built logic in database system. We should focus on:

1. Model as workflow
2. Procedures

Integration of Structured and Semistructured Data

XML: Create data of hierarchical form

Grand Challenge

10 year goal for the database community:

"Information Utility"

Making easier for everyone to

- Store
- Organize
- Access
- Analyze

Turn web into information utility over next decade.