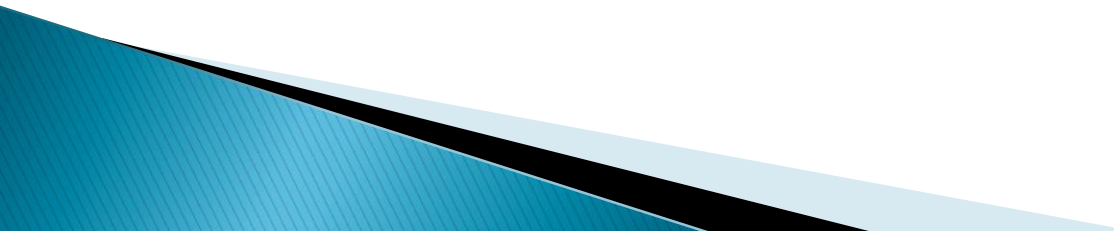


# XData – Data Generation for Testing SQL Queries

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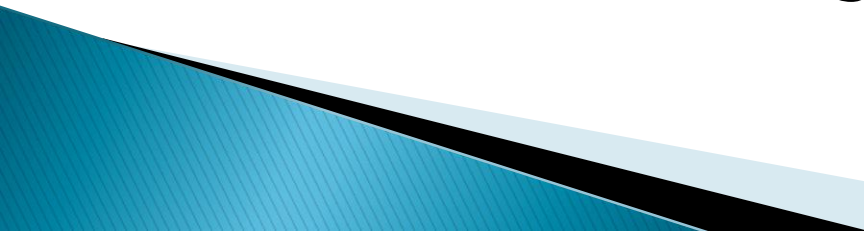
# XData

- ▶ Proposed by Shah et. al. in ICDE 2011.
  - ▶ Developed at IIT Bombay.
  - ▶ Further improved in 2014 by Chandra et. al.
  
  - ▶ Automated test data generation framework.
  - ▶ Mutation testing based approach.
  - ▶ Constraint based approach.
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# Mutation Testing

- ▶ SQL query mutations
  - Small, correct syntactical changes
  - ... A JOIN B ...  $\rightarrow$  ... A OUTER JOIN B ...
  - ... WHERE A < 10  $\rightarrow$  ... WHERE A  $\geq$  10
- ▶ Aim of XData
  - A dataset for each such mutation

# Class of Mutations Handled

- ▶ Join type mutations.
  - ▶ Comparison operator mutations.
  - ▶ Mutations involving strings in predicates.
  - ▶ Missing or additional group by attributes.
  - ▶ Set operator mutations.
  - ▶ Mutations like swap of nulls with not nulls.
  - ▶ Aggregation mutations.
  - ▶ Mutations involving subquery connectives.
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# Ongoing Work

- ▶ Handling more query constructs.
    - with clause
    - case clause
  - ▶ Enhancing grading tool.
  - ▶ Database Application Testing.
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