

SECTION 2

understanding the landscape



CENTER FOR DATA-DRIVEN DISCOVERY

PIPELINE

COMPUTER SCIENCE

MATH/STATISTICS/MINING

GRAPHIC DESIGN

INFOVIZ/HCI

acquire → parse → filter → mine → represent → refine → interact

Obtain the data, whether from a file on a disk or a source over a network.

Provide some structure for the data's meaning, and order it into categories

Remove all but the data of interest.

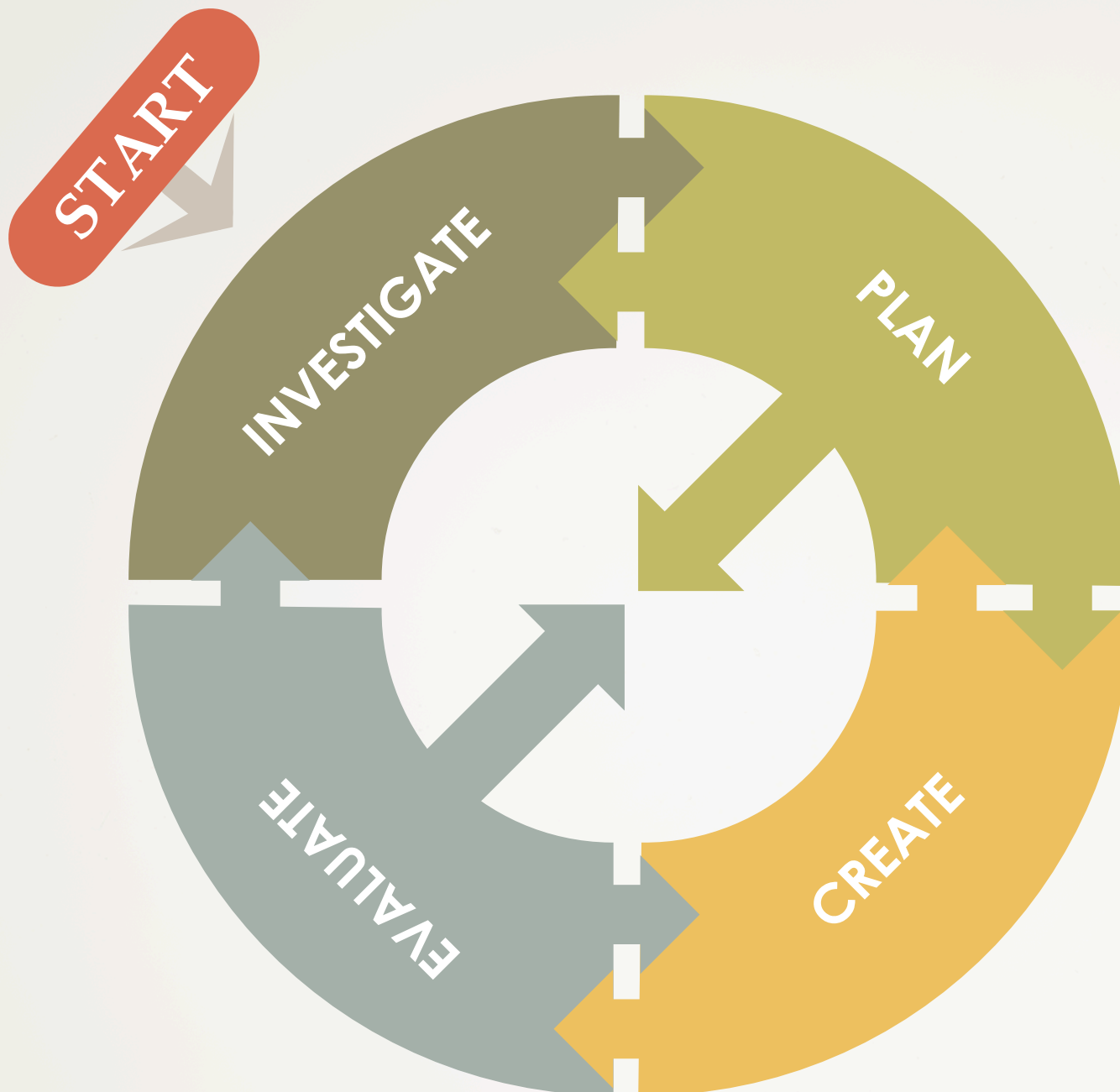
Apply methods from statistics or data mining as a way to discern patterns or place data in mathematical context.

Choose a basic visual model, such as a bar graph, list, or tree.

Improve the basic representation to make it clearer and more visually engaging.

Add methods for manipulating the data or controlling what features are visible.

BEN FRY



UNIFIED DESIGN CYCLE FOR VISUALIZATION



CENTER FOR DATA-DRIVEN DISCOVERY

DEPTH



QUICK INSPECTION



ANALYSIS TOOL

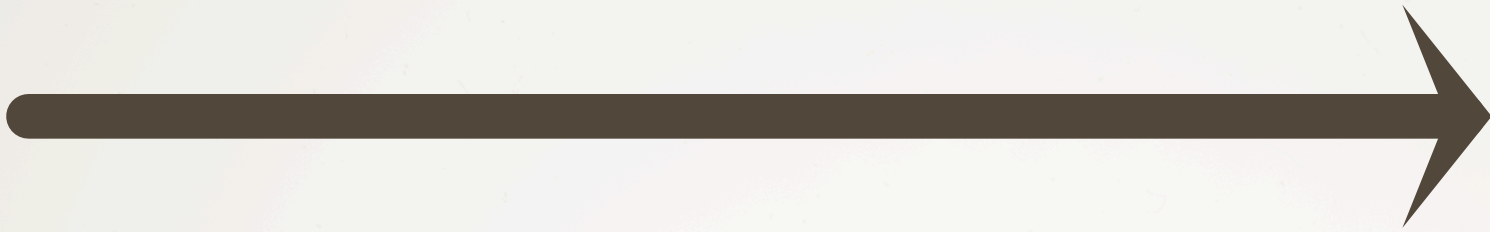


BATCH/DISCRIMINATION TOOL

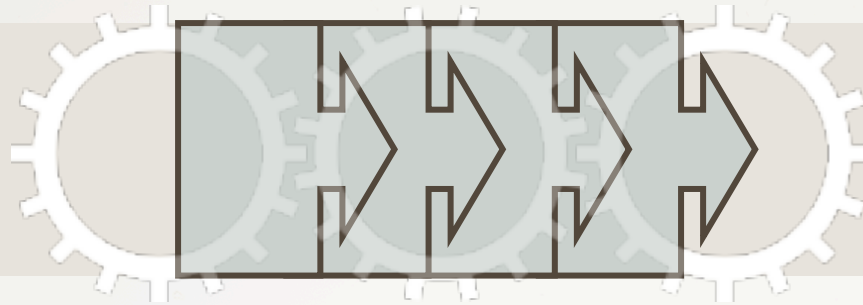


CENTER FOR DATA-DRIVEN DISCOVERY

VISUALIZATION PIPELINE



CENTER FOR DATA-DRIVEN DISCOVERY



⇒ VIZ ENGINE ⇒

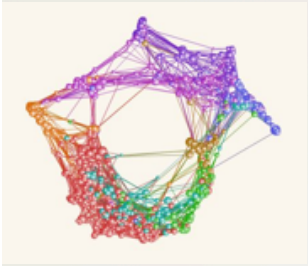
DATA + GOAL

GEOMETRIC STRUCTURE



CENTER FOR DATA-DRIVEN DISCOVERY

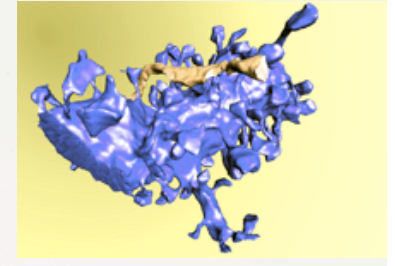
GEOMETRIC STRUCTURE



UNSTRUCTURED
ABSTRACT DATA
multi-dimensional data RECORDS

mapping + paradigms ← interaction

infoviz



STRUCTURED
2D/3D DATA
scalar/vector/tensor + time

paradigms ← interaction

sciviz

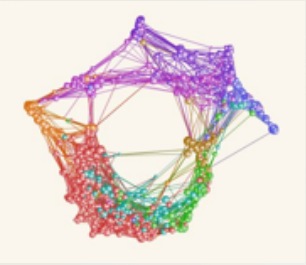
ieee scivis
ieee infovis
siggraph

portal.acm.org/dl.cfm + ieeexplore.ieee.org



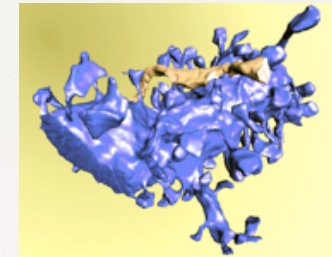
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GEOMETRIC STRUCTURE

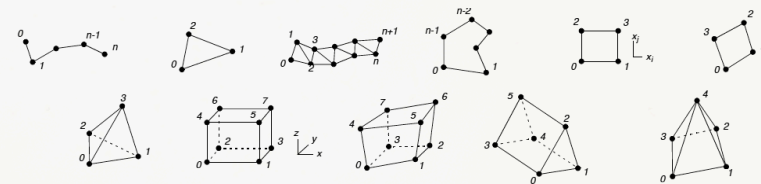


UNSTRUCTURED
ABSTRACT DATA
multi-dimensional data RECORDS

MPG Cylinders Horsepower Weight Acceleration Year Origin
8. 50.4 2.8 8.2 4 40. 250. 4 1500. 5500. 4 5. 30. 4 69.5 82.5 4 .8 3.2 3
18.000000 8.000000 130.000000 3504.000000 12.000000 70.000000 1.000000
15.000000 8.000000 165.000000 3693.000000 11.500000 70.000000 1.000000
18.000000 8.000000 150.000000 3436.000000 11.000000 70.000000 1.000000
16.000000 8.000000 150.000000 3433.000000 12.000000 70.000000 1.000000
17.000000 8.000000 140.000000 3449.000000 10.500000 70.000000 1.000000
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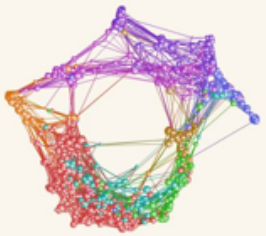


STRUCTURED
2D/3D DATA
scalar/vector/tensor + time

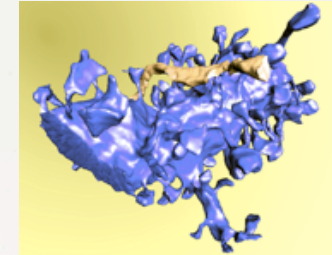
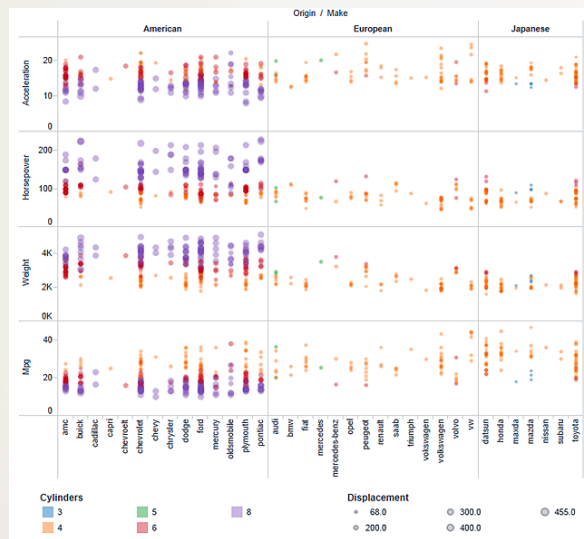


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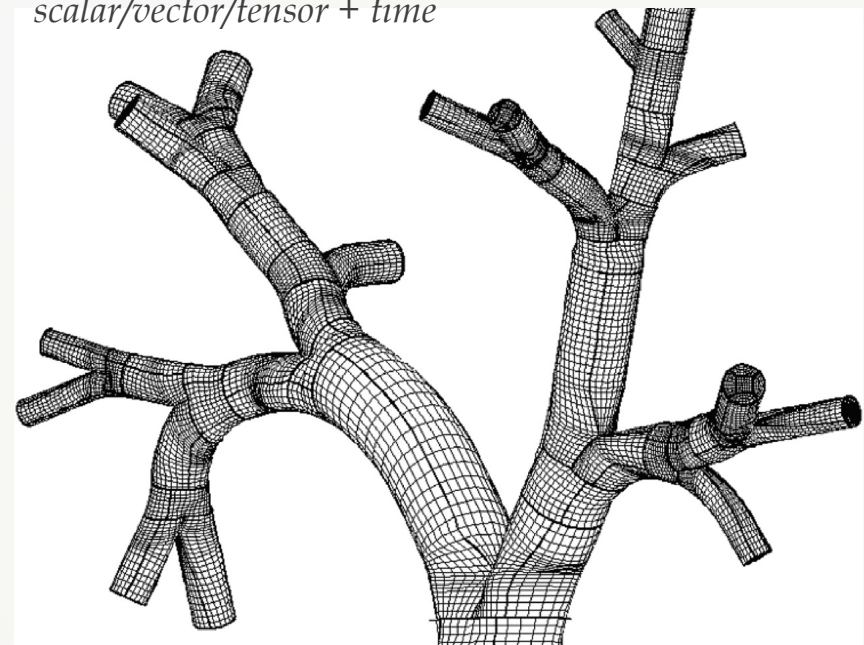
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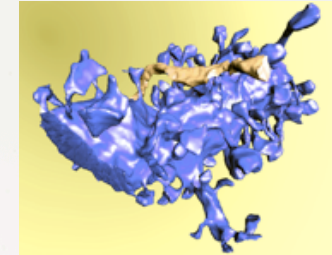
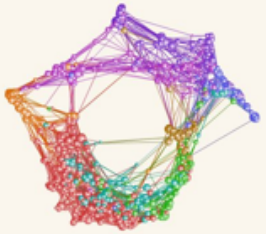


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2D/3D DATA
scalar/vector/tensor + time



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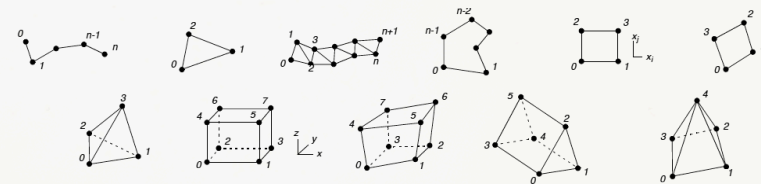
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