

# Building parallel coordinates

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## Parallel Coordinates: Good

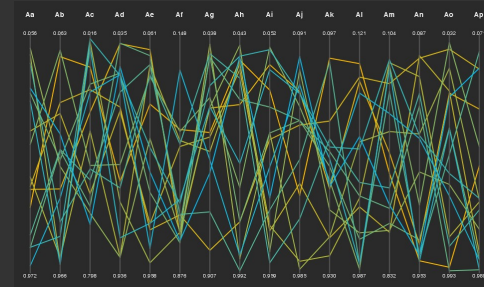
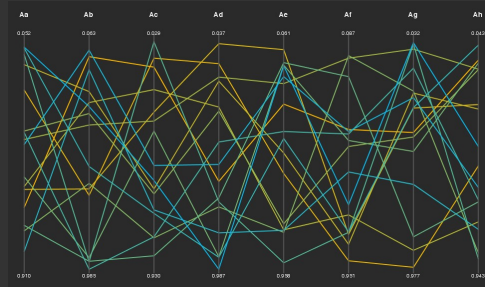
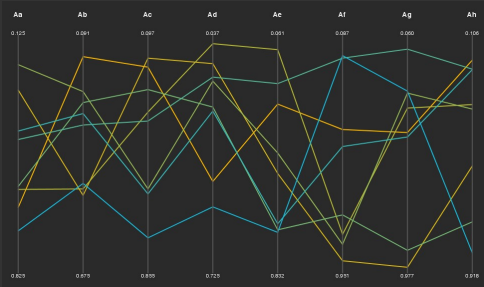
Multivariate data  
Conceptually simple  
Apply Generally  
Cheap to render

## Parallel Coordinates: Bad

Visual clutter  
Not high dimensionality  
Pairwise comparison  
Order of axes

## Order of axes

Dimensional reduction  
Computer-controlled ordering  
Manual axis shuffling

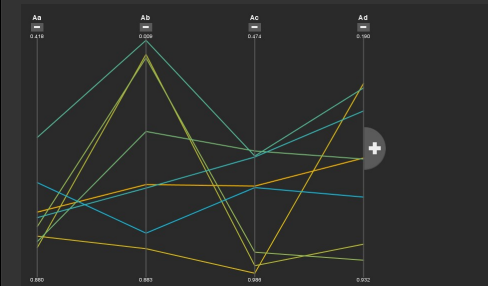
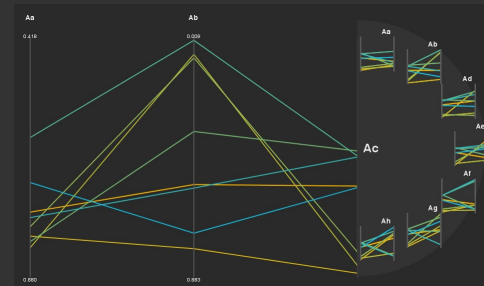
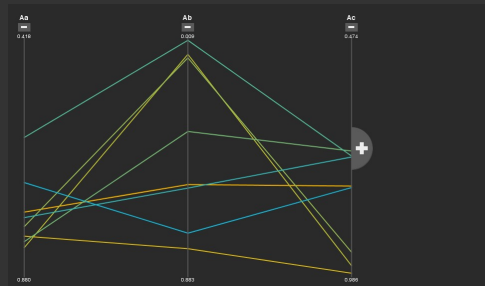


## Shuffling

Scales poorly  
Mentally, physically expensive  
Requires knowledge of data  
Labour and luck

## Wanted ordering method

Simple  
Inexpensive  
User control  
Exploratory



## Advantages

Piece-by-piece exploration  
Look ahead  
Simplify the plot

## Immediate advantages

Efficiency  
Space  
Lower mental load  
Comparison

## Development

Simple when simple  
Formal and informal  
Reinventing wheel



[from <http://www.processing.org/>]

## Comparing methods

Shuffling vs. Fan-menus  
Time, error rates  
Conclude one is better

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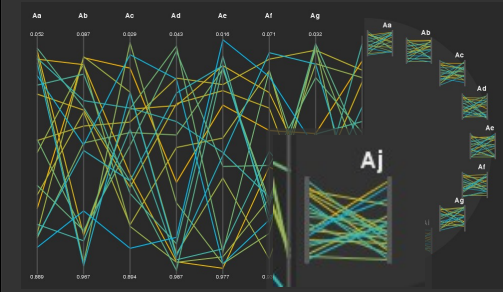
## Evaluating the method

Exercises with real data  
Ability, satisfaction

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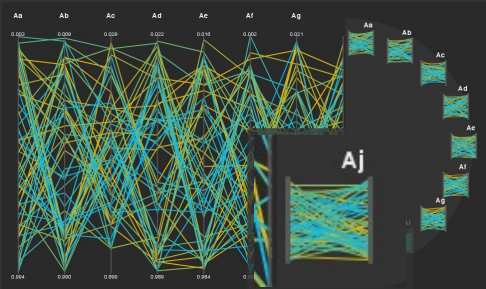
## Evaluating the method

Data-dependent  
Artificial tasks  
Method or lack of understanding?

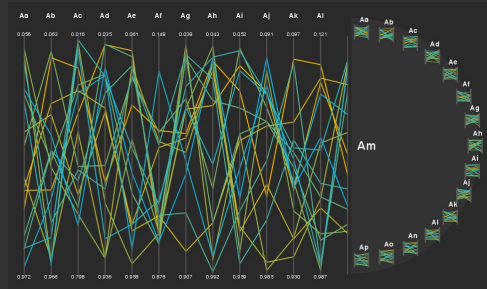


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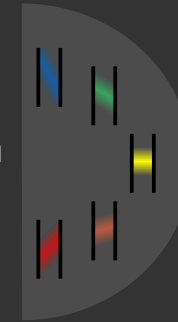
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## Future work

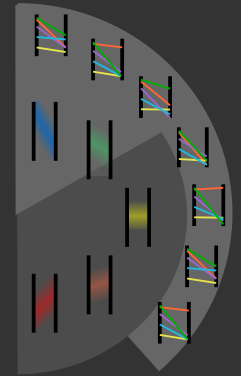
Filter and sort  
Sort by cluster, trend  
Include metadata



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## Drawbacks

Comparison  
Mouse efficiency  
Mental, physical cost  
Less exploratory



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Parallel coords are useful  
Room for improvement  
Useable and informative

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## User constructed plots

Showing  
Exploring  
Understanding

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