Integrating R into the InfoVis System Visplore

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useR!, 2009
Motivation

- Lack of high performance visual exploratory analysis tools in R
- Convenient and powerful engine for explorative data analysis
- Seamless integration of visualization and processing
What is Visplore?

- Visual Analytics software
- Generic approach: applicable to analysis of many kinds of data
  - E.g., CRM-data, telecommunication network parameters, ...
Features

- Multiple types of views for various data types and tasks
  - Currently 12 different types of highly parameterizable views
  - Arbitrary view layout
- Views linked by interactively defined subsets ("Brushing")
  - Complex brushes possible by compositing simple brushes via AND / OR / SUB
  - Different layers for comparison
- Interactive Optimization and Data Mining
- Interactively handling very large data (> 1 Mio. rows)
- System wide Undo- / Redo
- Support for Windows and Linux
Technical

- Written in C++
- OpenGL used for rendering
- gtk+ used for GUI
- Designed for large data sets
  - Highly multi-threaded
  - Quick preview during interaction
  - Memory management
- Open architecture
  - Views / importers / etc. are plugins
R integration

- Console
- Data synchronization
- Focus object
- R scripts
- Scripting Visplore features
**R integration**

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**Assignable Attributes of R GUI**
- Channel: Petal.Length
- Missing attributes: Petal.Width

**Properties of R GUI**
- Object Tree
- Focus
- R Object: Petal.Length
- Class: numeric
- Set: Update to Channel
- Set: Update from Channel
- Get: Check synchronized
- Get: Rename
- Opt: Delete
- Opt: Show and Edit Data
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```r
plot(Petal.Width~Petal.Length, col=focus+1, main="Interactive R Graphics")
abline(lm(Petal.Width[focus]-Petal.Length[focus]))
```
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Petal.Length[focus] = Petal.Length[focus] + 1

UpdateToChannel(Petal.Length)
Interaction loop

- Selection
- Visualize Results
- Update Focus
- Execute R Script
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**Software demo**
Future work

- Tight integration of R graphics into the Visplore system

- Results of R functions in Visplore views

- Convenient methods to visualize R results
Thank you for your attention!

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