



# The 34th Symposium on the Interface of Computing Science and Statistics

Montréal, Quebec, Canada 2002

## No Need to Talk to Strangers

### Cooperation of Interactive Software with R as Moderator

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## Interactive Software

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- ⊕ **visualisation of structures**
- ⊕ **exploratory analysis**
- ⊕ **hot linking and modifications**
  
- ⊖ **task-specific**
- ⊖ **isolated, no interfaces**
- ⊖ **not extensible**



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## R/S Environment

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- ⊕ **versatile**
- ⊕ **modular, extensible**
- ⊕ **well-defined interfaces**
  
- ⊖ **command-driven graphics**
- ⊖ **no interactivity**
- ⊖ **too complex for simple tasks**



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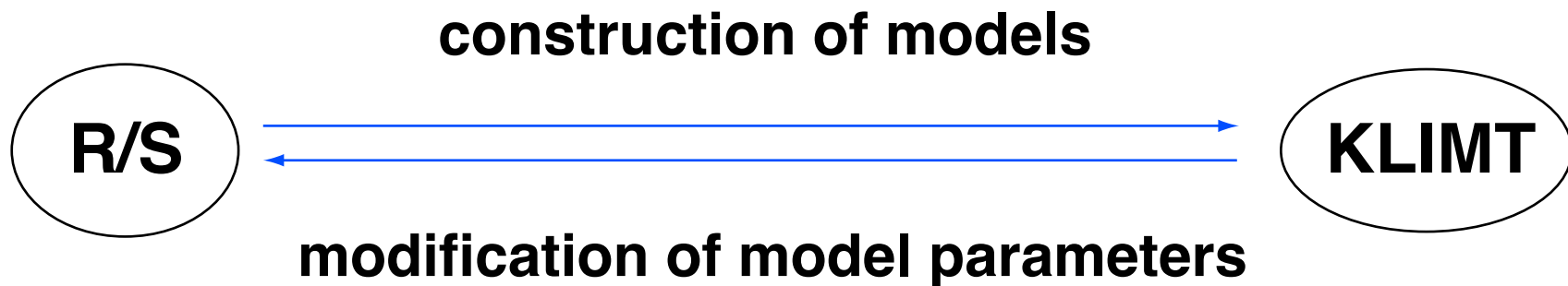
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## Motivation

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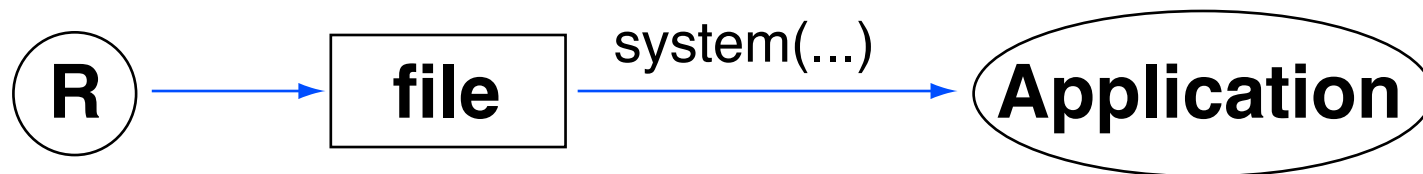


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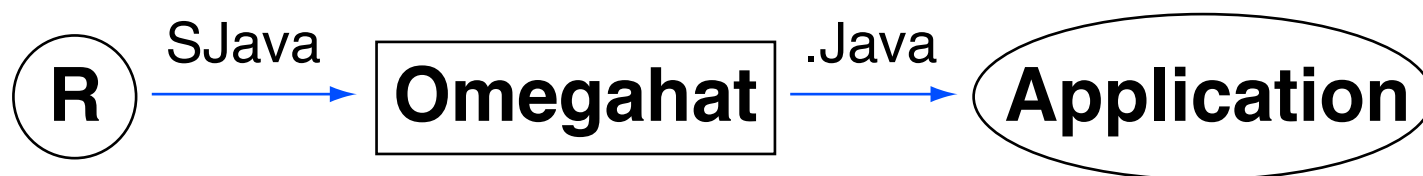
## Possible Interfaces

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- **Flat File**



- **Omegahat**





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## Flat File Interface

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- ⊕ **Easy to setup**
- ⊖ **File parser (app) and/or creator (R) needed**
- ⊖ **No direct interactivity**
- ⊖ **R instance is blocked until application finishes**
- ⊖ **Application calls are not system-independent**



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## Omegahat Interface

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- ⊕ R and application work in parallel
- ⊕ Additional commands and callbacks are possible
- ⊕ Direct access to data structures
- ⊕ Multiple applications can run from one R instance
  
- ⊖ Interface setup necessary
- ⊖ Stability issues on some platforms



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## Some applications using Omegahat

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- **ggobi**
- **ORCA**
- **KLIMT**
- **Mondrian**



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## Some applications using Omegahat

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- ggobi
  - ORCA
  - KLIMT
  - Mondrian
- 



**Don't talk to strangers - talk to R**



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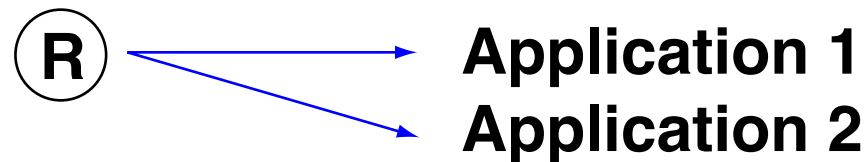
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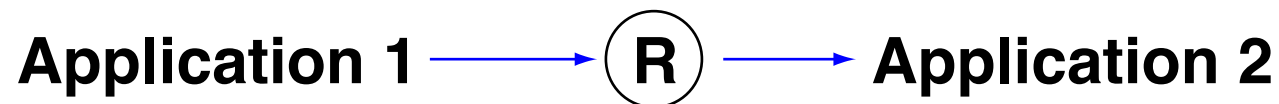
## Cooperation Setups

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- **Controlled by R**



- **Controlled by application**





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## Example

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**Mondrian**

**R**

**KLIMT**



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## Example

---

**Mondrian**

graphical datamining,  
data selection

**R**

**KLIMT**



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## Example

---

**Mondrian**

graphical datamining,  
data selection



**R**

build tree models based on  
supplied data

**KLIMT**



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## Example

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**Mondrian**

graphical datamining,  
data selection

**R**

build tree models based on  
supplied data

**KLIMT**

visualize trees, exploratory  
data analysis



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## Example

---

**Mondrian**

graphical datamining,  
data selection

**R**

build tree models based on  
supplied data

**KLIMT**

visualize trees, exploratory  
data analysis

best classifier and  
model information





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## Example

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**Mondrian**

graphical datamining,  
data selection

**R**

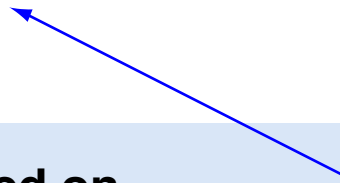
build tree models based on  
supplied data

pass back

**KLIMT**

visualize trees, exploratory  
data analysis

best classifier and  
model information





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## Compatibility tests with SJava

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	Java from R			R from Java		
	OS X	Linux	Win	OS X	Linux	Win
<b>available</b>	✓	✓	✓	✓	✓	✓
<b>ext. libraries</b>	✓	✓	?	✗	✓	✓
<b>stable</b>	✓	✗	?	✗	✗	✓

**Unix based systems: tested with R-1.4.1, SJava 0.64-0 and JDK 1.3.1**  
(MacOS X: own port of SJava and XDarwin based R from fink package)

**Windows: tested with R-1.3.1, SJava 0.62-8**



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## Conclusion

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- **Symbiosis of R/S and interactive software**
- **Flat file interface only for small tasks**
- **Omegahat as glue between applications and R/S**
- **Versatile cooperation setups between multiple interactive applications**
- **One interface for many tasks**
- **Omegahat-Team: Keep up the good work!**



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## Contact

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<http://stats.math.uni-augsburg.de>

<http://www.klimt-project.com> (KLIMT)

<http://www.omegahat.org> (Omegahat)