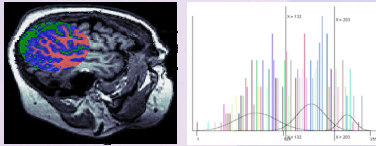


# SOCR: Web-Based Statistical Tools

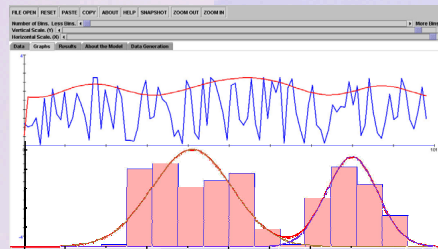
[www.SOCR.ucla.edu](http://www.SOCR.ucla.edu)

Ivo D. Dinov

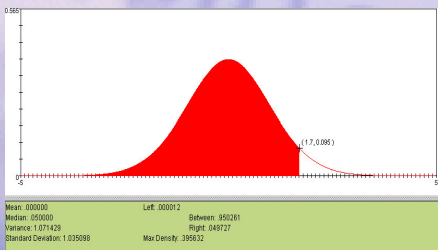
What is SOCR?



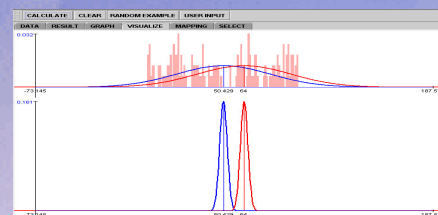
## Examples



o **Modeler**: Data generation using user's specifications. Dynamically adjusted views. **Top** graph shows a Fourier model with generated data indicated by blue & fitted model indicated by red. **Bottom** graph illustrates parameter estimation in mixture modeling.



o **Distributions**: Visualization and user-interaction with continuous and discrete statistical distributions. Summary statistics with dynamically computed CDFs for any given X. The graph shows Student's T distribution.



o **Analyses**: Includes dozens of parametric and non-parametric analyses, interactive data I/O, graphical display of results. The example shows power plots of null vs. alternative hypotheses of raw data and sample mean.

## Statistical Online Computational Resource

- Web-based interactive learning environment accessible over the **Internet**
- Developed under **Java**, a highly-portable development language, aimed for open source in the science and education community
- Widely used in **UCLA statistics** undergraduate courses and research labs
- Convenient statistics **online tutorial** with many graphs
- **Utilization**: Over **500,000** active users since January 2002
- Complete resource machine-translation in over **24 languages**



## SOCR Components

- **SOCR Analyses** – interactive tools for data mining, residual diagnostics, computation of power and sample size
- **SOCR Charts** – a graphical package for online data visualization, including various useful video-like examples
- **SOCR Distributions** – demonstrate commonly-used distributions with features allowing user-entered parameters
- **SOCR Experiments** – in-class virtual probability experiments and simulations
- **Interactive SOCR Games** – provide fun learning experiences
- **SOCR Modeler** – dynamic models for user-provided or randomly-generated data

## Recent SOCR Developments

- **SOCR Distributome** – interactive graphical exploration of probability distributions
- **Graphical Power Analysis** added for the SOCR Analysis tool
- **Expansion of SOCR Modeler** resources for model fitting and assessment
- **SOCR Wiki EBook** – the first complete, collab, open and multilingual prob & stats EBook

## References: [http://socr.ucla.edu/htmls/SOCR\\_References.html](http://socr.ucla.edu/htmls/SOCR_References.html)

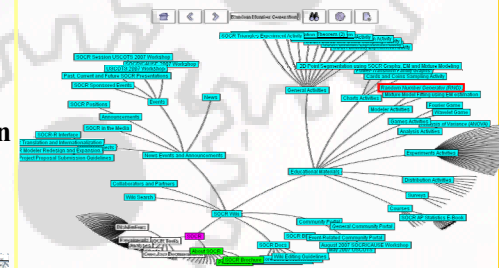
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## Acknowledgments: [http://socr.ucla.edu/htmls/SOCR\\_Acknowledgements.html](http://socr.ucla.edu/htmls/SOCR_Acknowledgements.html)

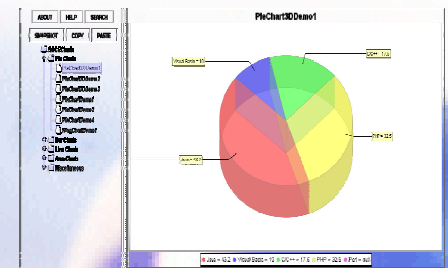
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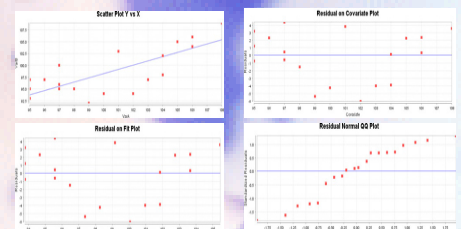
## Examples



o **SOCR HT Viewer**: Allows dynamic search, exploration and discovery of probability and stats learning materials and instructional resources.



o **Charts**: EDA of simulated or user-specified data displayed in 2D or 3D in static or animated graphs. A comprehensive list of charts (>60) designed for both generic and specialized uses. The graph shows a 3D pie chart.



o **Analysis Example**: Plots of linear regression model fitting. Scatter plot of variables and graphical assistance with residual diagnostics, such as Quantile-Quantile Plot.