Exploratory Spatial Data Analysis with PySAL

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FOSS4G
Portland, Or
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PySAL Objectives

Leverage Existing Tools Development

- GeoDa/PySpace
- STARS

Develop Core Library

- spatial data *analytical* functions
- enhanced specialization, modularity
- fill void in geospatial Python libraries

Flexible Delivery Mechanisms

- interactive shell
- GUI
- Toolkits
- webservices

Acknowledgments

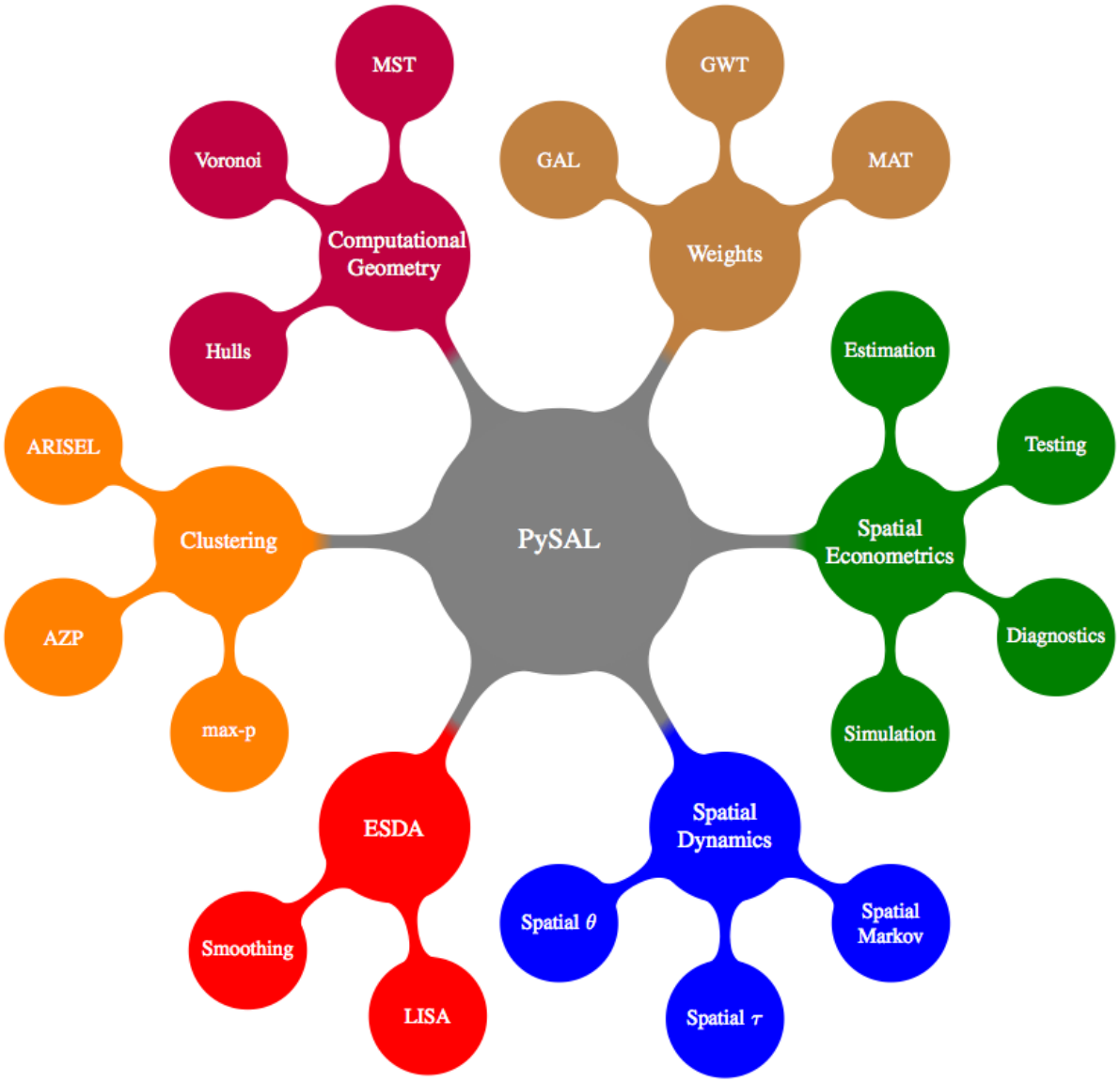
- **NSF** New Approaches for Spatial Distribution Dynamics
- **NSF** CyberGIS Software Integration for Sustained Geospatial Innovation
- **NIJ** Flexible Geospatial Visual Analytics and Simulation Technologies to Enhance Criminal Justice Decision Support Systems
- **NIH** Geospatial Factors and Impacts: Measurement and Use
- **NSF** Spatial Analytical Framework for Examining Sex Offender Residency Issues Over Space and Time
- **NSF** An Exploratory Space-Time Data Analysis Toolkit for Spatial Social Science Research
- **NSF** Hedonic Models of Location Decisions with Applications to Geospatial Microdata

Team

Serge Rey	Luc Anselin
Charles Schmidt	Dave Folch
Myunghwa Hwang	Dani Arribas
Phil Stephens	Julia Koschinsky
Pedro Amaral	Nick Malizia
Xing Kang	Xun Li
Xinyue Ye	Andrew Winslow
Mark McCann	Ran Wei
Nancy Lozano	Jing Yao
Jay Laura	

and contributions from many others!

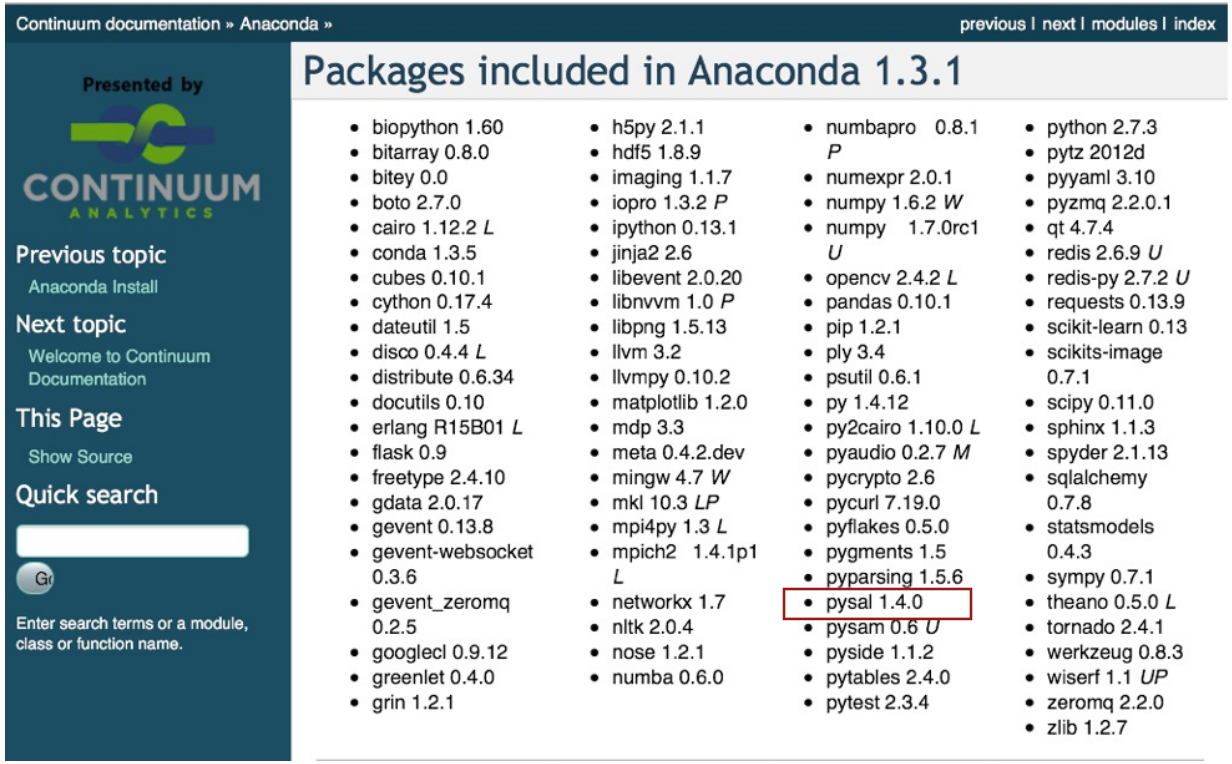
Components


PySAL
Computational Geometry
MST
Voronoi
Hulls
Weights
GWT
GAL
MAT
Clustering
ARISEL
AZP
max-p
Spatial Econometrics
Estimation
Testing
Diagnostics
Simulation
ESDA
Smoothing
LISA
Spatial Dynamics
Spatial θ
Spatial τ
Spatial Markov

PySAL Development

Release History

- 1.0 July 2010
- Six-month release cycle
- 1.8 July 2014
- BSD License
- 50k+ downloads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erlang R15B01 L
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matplotlib 1.2.0
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pytest 2.3.4
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pyzmq 2.2.0.1
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redis-py 2.7.2 U
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scikits-image 0.7.1
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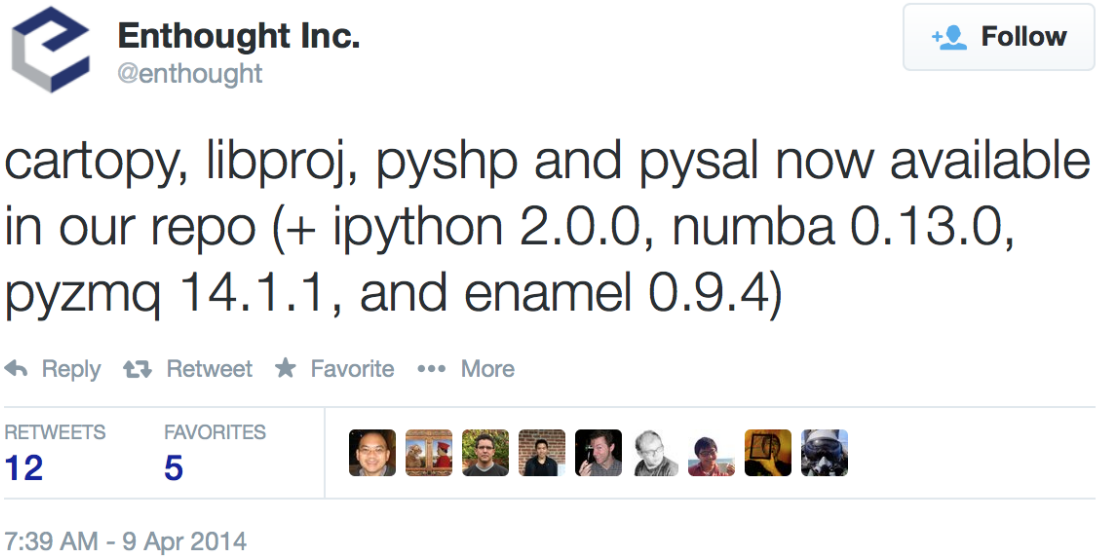
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Tutorial

Goals

- Introduction to Python tools for scientific computing
- PySAL for exploratory spatial data analysis

Schedule

- Installation
- iPython Notebook
- Data/IO
- Visualization
- Weights
- ESDA
- Spatial Dynamics

Repository for tutorial materials: https://github.com/sjsrey/foss4g14

For More Information

http://pysal.org
http://github.com/pysal
http://geodacenter.asu.edu
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