


BinX

Dynamic binning for time series


Project update
Information Visualization - CS533c
Lior Berry

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Motivation


- Time series are ubiquitous and **important**
- Lots of information = **long series**
- Understanding a long time series is hard !
- Comparing two time series is even harder !!



The Data & tasks


- Daily currency exchange rates over several years
- Comparing different time periods
- Comparing two currencies

DATE	GBP	CAD	JPY
1/1/1999	0.6867	1.5315	113.3
1/2/1999	0.6112	1.5325	113.49
1/3/1999	0.6033	1.532	113.35
1/4/1999	0.6028	1.5272	113.62
1/5/1999	0.6042	1.523	111.33
1/6/1999	0.6039	1.5096	112.39
1/7/1999	0.6056	1.512	111.18
1/8/1999	0.609	1.5125	111.48
1/9/1999	0.6096	1.512	110.89
1/10/1999	0.6099	1.5125	110.4
1/11/1999	0.6096	1.5073	109.5
1/12/1999	0.6138	1.5056	112.15
1/13/1999	0.6066	1.529	112.4
...



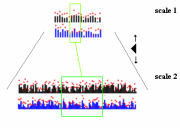
Proposed approach

- **Binning** over time intervals simplifies exploration and comparison
- Dynamic binning (continuous)
- Mitigating information loss in bins (visual encoding, “glyphs”)

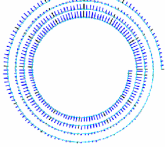


Visualization approach


- Clear spatial cues
- Mix and match
- Context maintenance



Trapezoidal

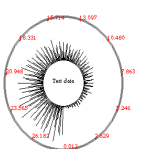
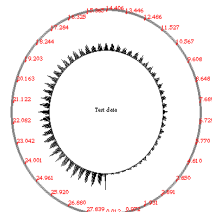



Spiral / Circular



Related work

Dynamic Aggregation with Circular Visual Designs, Mei C. Chuah

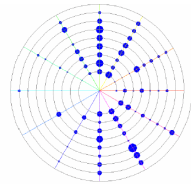





Related work

- Cluster and Calendar based Visualization of Time Series Data, Wijk, Selow
- Interactive Visualization of Serial Periodic Data, Carlis, Konstan

	January	February	March
Jan	4 10 20 27	3 10 17 24	3 10 17 24 31
Feb	7 14 21 28	4 11 18 25	4 11 18 25
Mar	1 8 15 22 29	5 12 19 26	5 12 19 26
Apr	6 13 20 27	6 13 20 27	6 13 20 27
May	3 10 17 24	7 14 21 28	7 14 21 28
Jun	4 11 18 25	8 15 22 29	8 15 22 29

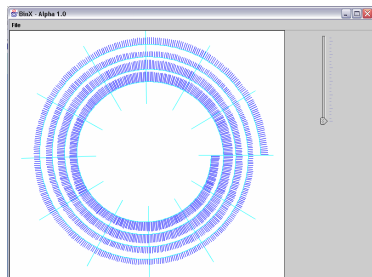


Project state

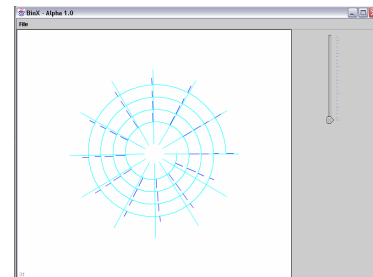
- Currency data assembled (fxhistory *)
- Application framework using Java2D
- Data parsed and processed
- Focus on spiral display
- Basic Interaction (keyboard based)

* <http://www.oanda.com/convert/fxhistory>

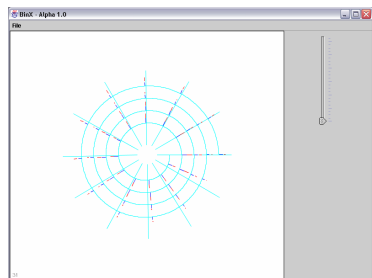
“Demo”



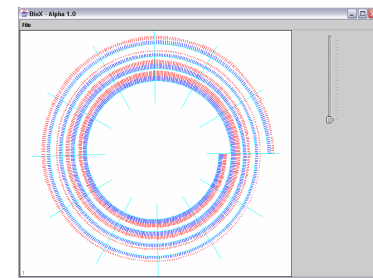
“Demo” continued



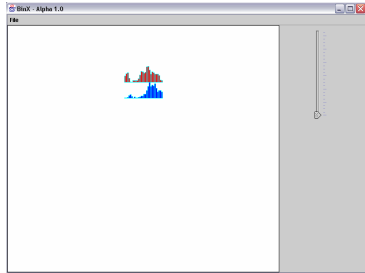
“Demo” continued



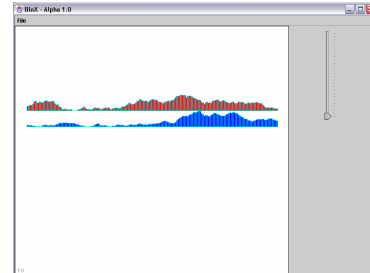
“Demo” continued



“Demo” continued



“Demo” continued



Milestone check

- Preparation of test data
- Prototype of visualizations and basic interactions (dynamic change of bin size)
- Finalizing the visualization paradigm
- GUI + Linked navigation implementation
- Implementing bin similarity display, based on clustering (+ consideration of displaying other indicators)

Summary

- Dynamic binning can be a powerful aid
- Visual cues to assist the user
- Questions ?