

Dynamical System Trees and Sector Classification

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Outline

- Dynamical System Trees
- Data
- Tests
- Results/Analysis
- Conclusion

Dynamical System Trees

- Hierarchy of HMMs and LDS
 - Tractability
 - Structured Mean Field Algorithm
 - Diverse Applications
- Domain
 - Bottleneck
 - Flexible
 - Simple
- Code
 - DST: Howard/Jebara
 - Test Bench: Daniel Mack

Dataset

- Stocks
 - Flexible
 - Applicable
 - Dimensionality
- Time Series
 - Multiple Years (2001 to 2006)
 - Sectors(Technology/Finance)
 - Industries
 - Pairs of Stocks
- Yahoo Finance
 - Thanks to David Burkat

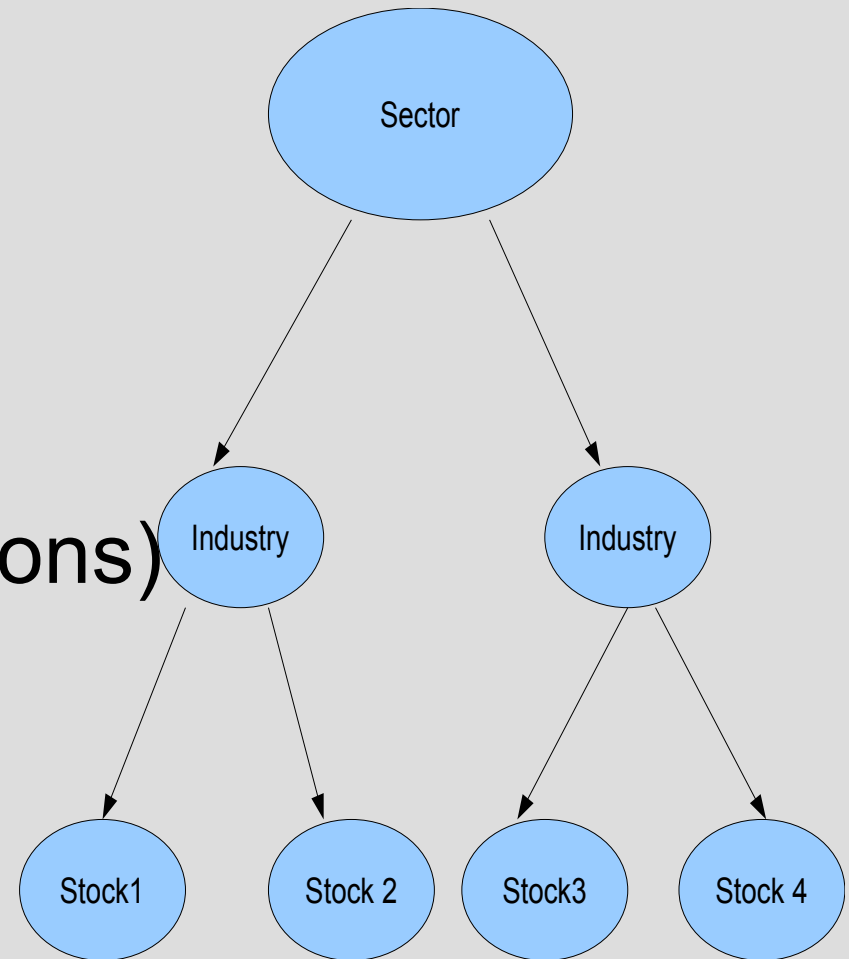
Tests

- Types of Hierarchies

- Sector/Industry
 - Still Paired Stocks
- Just Sector
 - Unpaired
- LDS

- Classification (Permutations)

- Technology
 - Software
 - Semiconductors
- Finance
 - Credit Services
 - Banks



Results and Analysis

- SLDS
 - 9/16 ~ 56%
 - 1/8 for Technology
 - 0 / 4 Software Stocks
 - 1 / 4 Semiconductor(NSM)
 - 8/8 for Finance
- Complicated Structures (Both)
 - Same Accuracy Results for both Models
 - 14/20 ~ 70%
 - 4/10 for Technology
 - 4/5 with ADI and AMD Pair
 - 0/5 with MXIM and TXN Pair

Conclusion

- Hierarchies
 - Pros
 - Cons
- The Data
 - Interesting
 - Complexity
- Future Work
 - Hierarchies
 - Data