



## A Data Visualization Tool to Explore Multidimensional Clinical Datasets

### Summary

**Winnow™**, a visual knowledge discovery tool, was developed to detect patterns of Parkinson's disease progression using patient outcomes data but is easily adaptable for a broad range of clinical datasets with diverse components. The copyrighted software is designed as a big data analytics tool that efficiently sifts through arrays of longitudinal data (e.g. demographics, baseline variables, and outcomes) to identify patterns, generate hypotheses, and subject hypotheses to rigorous statistical analysis for data discovery.

### Key Investigators

Lisa Shulman, MD  
Amitabh Varshney, PhD

### Fields

Data Analytics  
Data Visualization

### Technology

Software

### Status

Available for licensing

### IP Status

Copyright

### UMB Docket Reference

LS-2017-024

### Market

In health care, the expanding scope of clinical and biologic markers of disease in large patient cohorts results in an increasing complexity and quantity of data. These new insights and opportunities have led to new challenges: 1) models of disease progression need revision to encompass progression of multiple diverse components, 2) up-to-date methodologies are needed to visualize patterns in big datasets with multiple, complex domains, and 3) novel quantitative tools are needed to analyze disease progression based on diverse domains and biologic markers. Advanced analytics that can be applied to patient profiles could help identify high-risk patients while supporting improved selection and matching of patients for specific disease-management and preventive care programs. Such analyses could also provide metrics to measure the success of such programs. Additionally, the ability to analyze disease patterns provides valuable insight to pharmaceutical and medical products companies to guide strategic decisions for R&D investments and improve clinical trial design. The predictive modeling market for advanced analytics in 2015 was about \$2.0 billion and is expected to reach nearly \$2.2 billion by 2020 at a CAGR of 1.5%.

### Technology

**Winnow™** is an innovative tool to efficiently sift through arrays of longitudinal data, identify patterns, generate hypotheses, and subject these hypotheses to rigorous statistical analysis. It has an intuitive, interactive and insightful platform- valuable to all stakeholders including scientists and clinicians, and flexible for application to a broad range of datasets with diverse components.

**Winnow™** currently consists of **three main panels to detect patterns of disease progression: (a) an Outcomes panel, (b) the Demographics panel, and (c) the Analytics panel.** The widgets included in (a) and (b) allow interactive filtering of patients and, through the brushing and linking of widgets, the filtering applies simultaneously to other widgets. Winnow can also explore subgroups to investigate and analyze specified patient subsets to compare baseline characteristics of disease progression.

### Stage of Development

- Testing and design for other data sets
- Developing additional user features and broadening statistical tools

