MINESET

Quickly Analyze Data with Web-Based Integrated Visualization and Machine Learning

BENEFITS

- Go from loading data to actionable insights within minutes
- Import, plot, analyze, and share findings all in one web-based application
- Intuitive User Interface makes data mining visual and interactive
- Reduce the simulation cycle loop with interactive Design Space Exploration and "What-if" Analysis
- Upload your data to the cloud and take it anywhere

"ESI MINESET is an agile data analytics and data mining platform that seamlessly integrates visualization, machine learning, and analysis and allows us to quickly and easily extract the most useful information out of Big Data sets."

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Professor and Dept. Chair
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ESI MINESET enables interactive exploration of data in the cloud via an advanced suite of visual tools for faster discovery of meaningful trends and relationships. It is designed to fit the needs of users at various technical levels.

For technical users, MINESET offers unlimited potential with a complete suite of data mining tools, database integration, and scalable performance. To accommodate business users, data mining results and visualizations are easily deployed and shared across corporate networks through point-and-click access to any piece of data.

This easy-to-use application requires no programming or running of complicated scripts. The MINESET REST API interface allows developers to embed MINESET tools into their customized solutions.

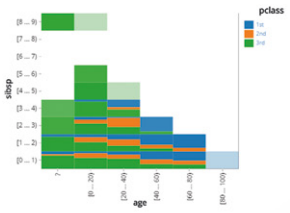
A Complete Solution for your Data Analytics Needs

Data Access and Transformation

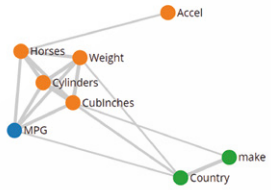
- Import data from flat files (ASCII or Excel), ODBC-compliant databases, and Salesforce
- Transform data
- Save and restore session management

Visual and Analytical Data Mining

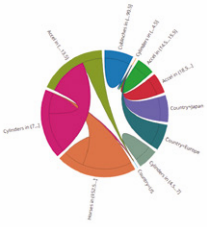
- Visual filtering and querying of data
- Synchronous selection across multiple visualizations
- Built-in statistical tool
- Interactive results for the following Machine Learning algorithms: Classification (Decision Tree and Naïve Bayes), Association, Regression, Clustering and Column Importance
- Sharing of individual visualizations or datasets

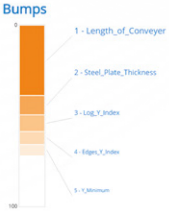


Heatmap



Column Graph


Association Rules Diagram

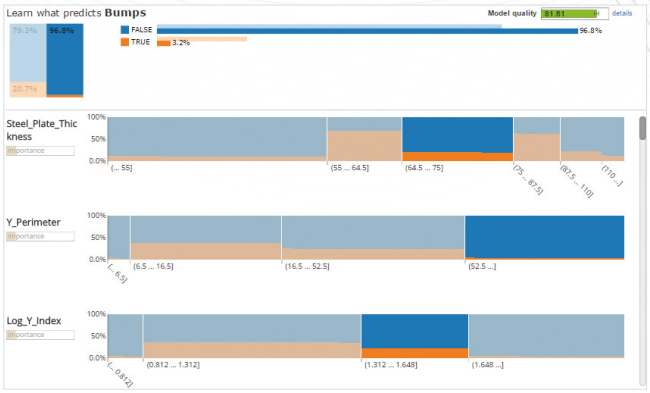


Column Importance Chart

Data Mining of Simulation Results

Today, Engineers in the field of Virtual Prototyping are routinely producing large amounts of diverse data from the simulation runs and hypothesis testing exercises. The ability to rapidly analyze this data dramatically increases productivity and closes the testing loop by putting the people who create the data in the analytics driver seat.

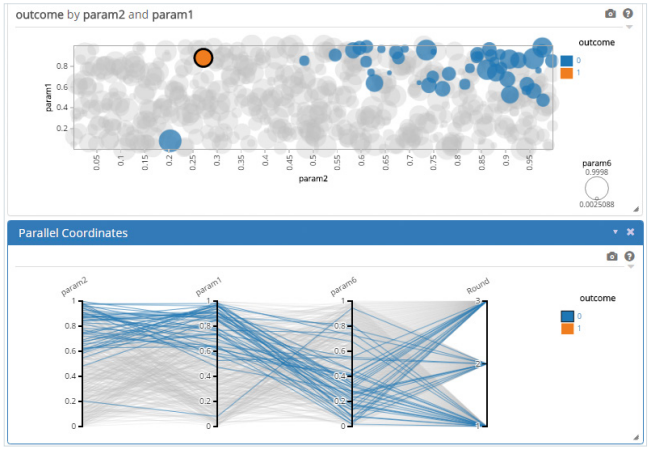
ESI MINESET integrates Visualization and Machine Learning tools to enable users without a background in data science to quickly and easily comprehend the relationships inherent in the data and create actionable insights.



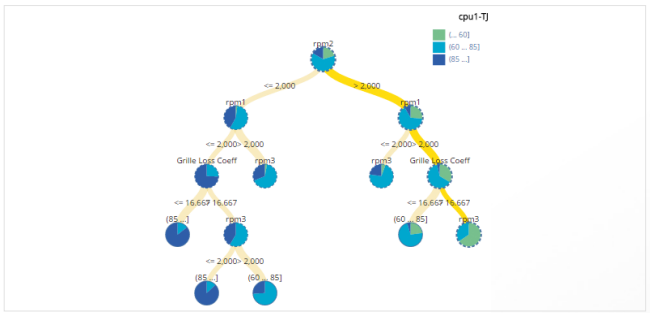
What-If analysis of value ranges quantifies the probabilities of a manufacturing defect taking place

Design Exploration

- Decision and Regression Trees partition the data to expose paths to either positive or negative outcomes.
- Parallel coordinates plot shows many dimensions simultaneously.
- Cluster visualizer finds hidden patterns in the data set.
- Association rules list parameter values that occur together more often than would be expected by chance.
- The Column Importance visualizer shows what input parameters have the largest influence on the response variable.
- Synchronized drill-through techniques are used to reveal patterns across multiple dimensions.
- With the interactive What-If visualizer, an engineer can quantify the effect individual variables have on the outcome of a simulation by simply clicking on value ranges.



Synchronized highlighting between bubble chart and parallel coordinates visualizers



A Decision Tree showing a path to parameter ranges guaranteeing that the response variable in a thermal simulation never reaches the high values

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ABOUT ESI GROUP

ESI Group is a leading innovator in Virtual Prototyping software and services. Specialist in material physics, ESI has developed a unique proficiency in helping industrial manufacturers replace physical prototypes by virtually replicating the fabrication, assembly and testing of products in different environments. Today, coupled with Virtual Reality, animated by systems models, and benefiting from data analytics, Virtual Prototyping becomes immersive and interactive: ESI's clients can bring their products to life, ensuring reliable performance, serviceability and maintainability. ESI solutions help world-leading OEM's and innovative companies make sure that their products will pass certification tests - before any physical prototype is built - and that new products are competitive in their market space. Virtual Prototyping addresses the emerging need for products to be smart and autonomous and supports industrial manufacturers in their digital transformation.
Today, ESI's customer base spans nearly every industry sector. The company employs about 1100 high-level specialists worldwide to address the needs of customers in more than 40 countries. For more information, please visit www.esi-group.com/

Images courtesy of: UC Irvine Machine Learning Repository