

Advanced Pattern Recognition Solutions

Classification • Regression • Clustering • Anomaly Detection • Explanation • Visualization • Computer Vision

Collect & Preprocess Data from Customer Sources



Aerospace Telemetry



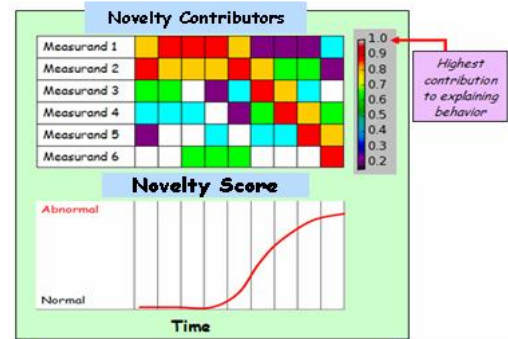
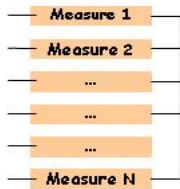
Medical Monitors



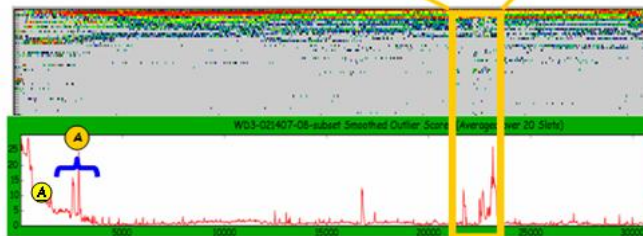
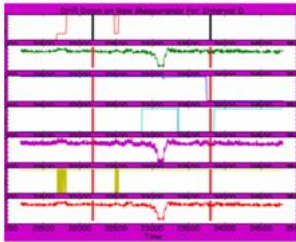
Industrial Process Control



Bioinformatics and drug discovery



Drill Down to Raw Measures that Explain Novel Events



The pattern recognition technology developed by Michigan Aerospace Corp. is able to discern events, anomalies and trends from continuous multivariate data streams in real time. Both diagnostic and prognostic analyses are easily supported. Our technology is completely data-driven. Models are built automatically using raw input data from our customers' sources.

Analysis of Customer Data Resources for Anomaly and Novelty Detection

INNOVATIVE DATA-DRIVEN SOFTWARE

HANDLE DATABASES/TABLES/RECORDS, IMAGES, VIDEO & VOLUMETRIC DATA OF UNLIMITED SIZE

OPTIMIZE SOLUTIONS FOR PERFORMANCE TRADE-OFFS ON THE CUSTOMER'S PLATFORM OF INTEREST

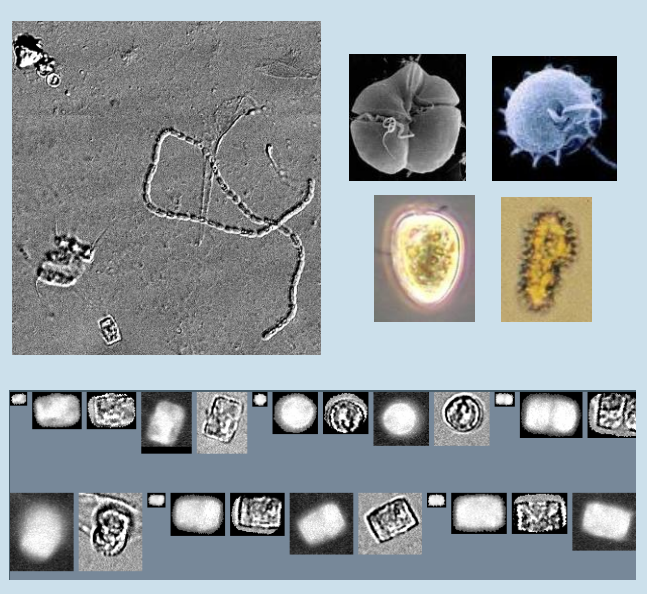
ATTAIN HIGH ACCURACY, AND EXPLAIN WHY DECISIONS WERE MADE

MICHIGAN AEROSPACE CORPORATION

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Expertise

- Mathematical morphology
- Statistical image processing
- Fourier and wavelet analysis
- Preprocessing, calibration, normalization, and enhancement
- Feature extraction
- Measuring of image attributes (texture, shape, color, etc.)
- Registration and mosaicking
- Segmentation and thresholding



Experience—Image Modalities

Laser-based 3-D Range & Reflectance	Light Microscopy
Multispectral (Thematic Mapper [TM], LandsAT, SPOT)	Electron Micrographs (EM, STEM)
Synthetic Aperture Radar (SAR)	Confocal Microscopy
Stereo Pairs	Computed Tomography (CT)
Scanned Documents	Magnetic Resonance Imagery (MRI)

The computer languages emphasized by the group are C/C++, Java and Python. MAC's Data Exploitation Group also supports most of the popular operating systems including Windows NT/2000/XP, Linux, dialects of Unix including Solaris, HPUX and others. The Group also has experience in supporting Real-Time operating systems such as VxWorks and Real-Time Linux as well as hardware solutions such as Field-Programmable Gate Arrays (FPGAs) and Graphical Processing Units (GPUs)

Pattern Recognition, Machine Learning & Optimization Techniques

Neural Networks	Decision Trees & Ensembles	Support Vector Machines
K Nearest Neighbors (KD-Trees)	Cerebral Model Arithmetic Computer (CMAC)	Adaptive Logic Networks
Sliding Neural Nets	Time-Delay Neural Nets	Self Organizing Maps (SOMs)
Naïve Bayes	Bayesian Nets	Dynamic Programming
Clustering techniques	Genetic Algorithms/Genetic Programming / Gene Expression programming	Hidden Markov Models
Hash-based Learning	Sparse Distributed Memory	Simulated Annealing

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