

**Industrial Artificial Intelligence
Lab GE Global Research
Manager: Anil Varma**

Intelligent reasoning technologies for complex engineering systems

Information Extraction

Algorithms to extract useful knowledge from operational data; data cleaning; data validation

Information Fusion

Sensor fusion; aggregating output of multiple models; high confidence output from ensembles

Predictive Modeling

Models of future behavior; diagnostics, prognostics; health estimation; learning and model maintenance

Optimization

Multi-objective evaluation tradeoff analysis, policy analysis, DE/DT simulation

Decision Support

Visualization; tradeoff surfaces; efficient frontiers; mixed initiative interaction; user interfaces

Intelligent Systems

Technology roadmaps; strategy and vision; GE business processes; value story; system transition; knowledge maintenance



Research Focus Areas

Computational Algorithms

- Neural Networks
- Genetic Algorithms
- Case-Based Reasoning
 - Fuzzy Logic
- Kolmogorov Complexity
- Kernel Split Find

Optimization and Decision Support

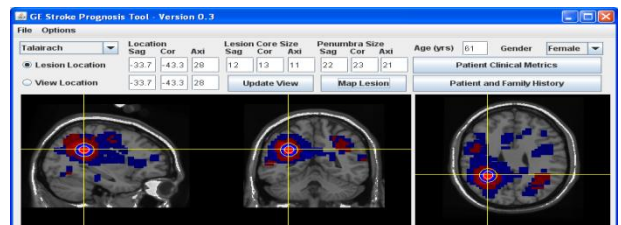
- Powerplant optimization
- Financial Portfolio Optimization
- Military Power Management

Prognostics and Health Management

- DARPA Prognostics
- Smart Wires for NASA
- GE Engine Diagnostics
- GE Rail Diagnostics

Condition-Based Maintenance

- Vibration Analysis
- Balance of Plant Monitoring
- Arcing Detection
- Engine Workscoping



Contact:

Raj Subbu (Senior Research Scientist)

Ya Xue (Research Scientist)

{subbu, xueya}@research.ge.com

(518) 387-6457 or 387-4684



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