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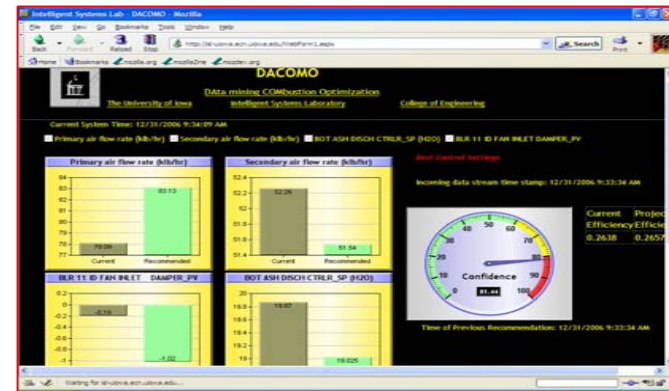
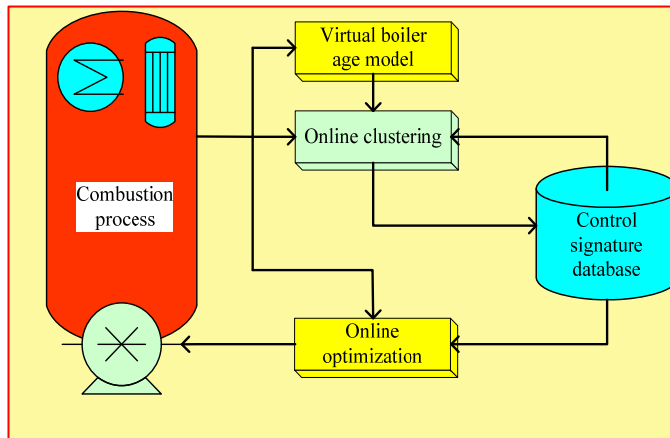
Energy Research

Data mining algorithms and software for optimization of heat rate and combustion efficiency of utility boilers

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Industrial Engineering Program

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Wind power management





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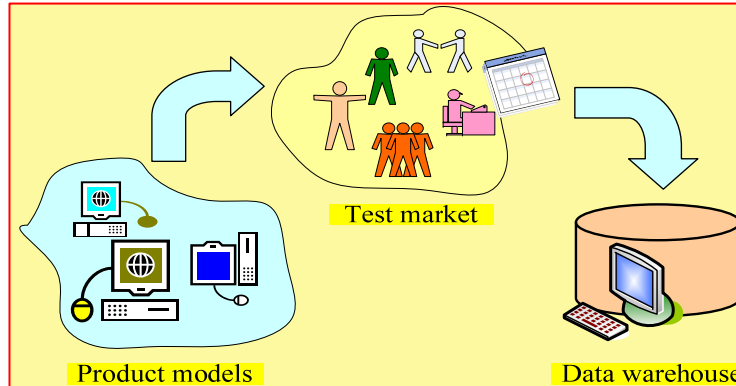
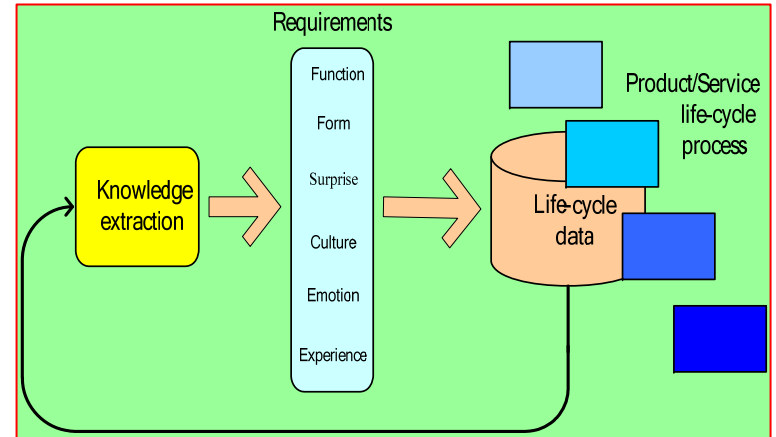
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Innovation Science and Industrial Applications

Discovery of science and practices of innovation



Data mining and evolutionary computation





Predictive Engineering

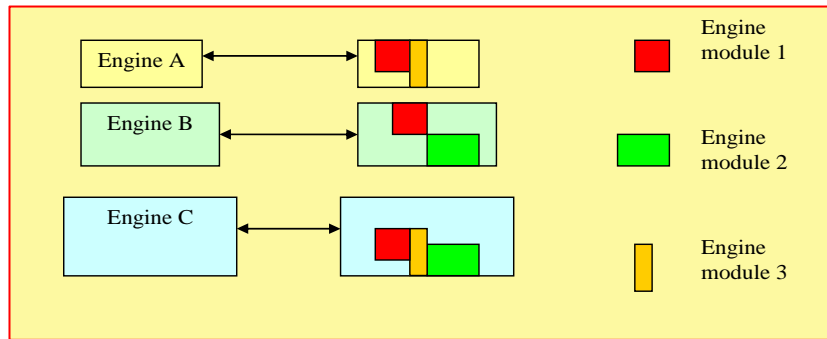
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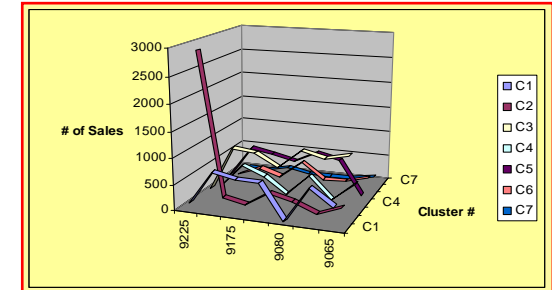
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Mass customization and personalization



	Frame	Wheels	Engine	Cabin	Backhoe
Customer 4	Large	Large	Large	Red	Yes
Customer 1	Large	Large	Medium	Green	No
Customer 3	Small	Medium	Medium	Yellow	Yes
Customer 5	Small	Medium	Small	Yellow	No
Customer 2	X Large	Large	X Large	Pink	No

Prediction of catastrophic faults



Pattern Recognition: Option Codes Only

Input File for Analysis: Raw Data / Processed Data

Segments: [] Basic Machines: [] Included Option Codes: [] Excluded Option Codes: []

Select Program: Exact Fuzzy

of Clusters: # of Clusters:

Choose Analysis Type: Code Only Price Only Code & Price

Matrix Generation Information: Max # of Operators: Max Price Increase (%): Max Price Decrease (%):

Buttons: Back, Generate File Only, Generate File and Analyze, Exit

Water Chemistry Alarm System - System Status

A Data-Mining Based System for Prediction of Water Chemistry Faults

Current Data Vector	Time Stamp - X Time Units	Prediction Per Time Unit
Time: 9/13/2003 11:01:00 AM	9/13/2003 10:51:00 AM	Stable
Gross Generator (MW): 189.01	9/13/2003 10:52:00 AM	Stable
Boiler Water Silica: 0.073	9/13/2003 10:53:00 AM	Stable
Hydrazine: 5.19	9/13/2003 10:54:00 AM	Stable
Condenser Cathod Conductivity: 9.46	9/13/2003 10:55:00 AM	Stable
Dissolved Oxygen: 7	9/13/2003 10:56:00 AM	Stable
Feedwater pH: 8.355	9/13/2003 10:57:00 AM	Stable
Boiler Water Phosphate: 3.178	9/13/2003 10:58:00 AM	Valuable
Boiler Water pH: 9.271	9/13/2003 10:59:00 AM	Valuable
Decision: Valuable	9/13/2003 11:00:00 AM	Valuable

System status: Abnormal operating conditions

Buttons: Enter, Exit

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Medical Informatics



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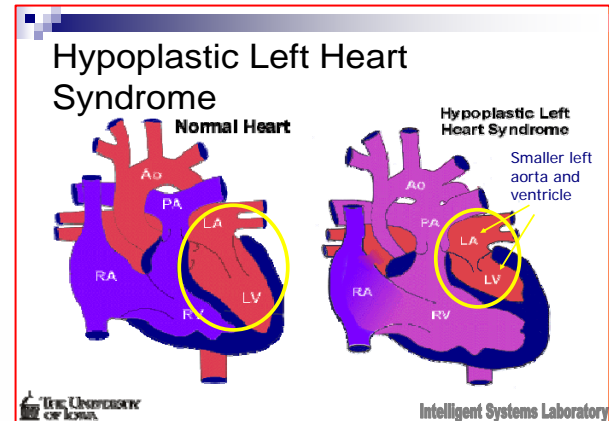
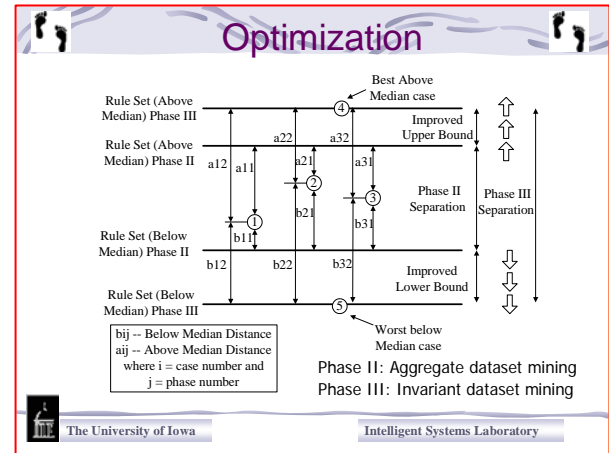
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Algorithms for noninvasive lung cancer diagnosis

Hypoplastic left heart syndrome

Bladder cancer therapy

Dialysis research



Data set										
No	ABC_SNP1	ABC_SNP2	ABC_SNP3	.....	Gender	Age	Race	Weight	Height	Decision
1	C_G	A_A	C_G	.....	Female	46	1	83.86	164.5	D_BAD
2	G_G	A_G	C_C	.....	Male	46	1	62.14	176.71	D_BAD
3	G_G	G_G	C_G	.....	Female	56	1	80.19	186.41	D_BAD
...
998	G_G	G_G	C_G	.....	Male	69	1	58.31	168.28	P_GOOD
999	C_C	G_G	C_G	.....	Female	49	3	89.77	177.48	P_GOOD
1000	C_C	G_G	C_C	.....	Female	66	1	47.19	153.82	P_GOOD