IU^B) Wednesday Colloquium

School of Engineering and Science

2007

The forging of paintings and other mathematical models for monitoring technical processes

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This talk addresses two problems:
1. How can a person with limited artistic potentials, i.e. the author of this abstract, forge a Van Gogh painting?
2. How does this relate to modelling, simulating and monitoring technical production processes?

We start with the more catchy problem 1, before introducing typical problems in 'Inverse Engineering'. Classical models of 'Forward Engineering' start with a model of a production machine and simulate/compute the resulting production behaviour/product quality. The related mathematical models for such forward computations are either given by a FEM model (discrete model) or an operator equation (continuous model).

'Inverse Engineering' refers to the task of measuring the production behaviour, inverting the mathematical model of the machine and thus determine defects, imbalances or other inadequacies of the machine.

We will briefly analyse the necessary mathematical theory (regularization techniques, sparsity constraints) and demonstrate the potential of these methods for determining imbalances in aero engines (turbines).

Wednesday, February 7, 2007
17:30, Conrad-Naber-Hall, Reimar-Lüst-Bldg. 172
Tea at 17:00, all are welcome