Overview of Computational Metrology

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Computational Metrology

- Metrology: The science of measurement.
- Sensors and Guaging
- Traditional CMM
- Cutting-Edge Scanning Machines
  - Laser Triangulation
  - Stereophotogrammetry
  - CT/MRI
  - CGI
- Need new software technologies to realize potential of recent hardware developments
Past Projects

- Rapid Prototyping Metrology
- Intelligent Data Reduction
- Rapid Inspection of Rapid Tooling
Rapid Prototyping Metrology

- Stereolithography
- Probe Tip and Stair-Stepping
- Separation of Defects
3D Measurement Data Reduction

- Even
- Deviation Magnitude
- Jacobian Row Magnitude
Rapid Inspection of Rapid Tooling
Future Work

- Pattern Recognition
- NURBS evaluation
Pattern Recognition

- Data Preprocessing
- Cloud Registration
- Model-Independent Dimensional Inspection
- Reverse Engineering
NURBS Evaluation

- New Registration Algorithms
- Characterization of Errors