

# Innovative Project 3D Technology

For questions concerning the Innovative Project 3D Technology at Vienna University of Technology please contact us via [3dtechnik\(at\)geometrie.tuwien.ac.at](mailto:3dtechnik(at)geometrie.tuwien.ac.at).



More information on research of the Geometric Modeling and Industrial Geometry Research Unit can be found at <http://www.geometrie.tuwien.ac.at/ig/>.

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## Aims and Scope

The innovative project **3D Technology** is concerned with the acquisition, processing, understanding, and reconstruction of 3D data. The corresponding technical, numerical, and algorithmic problems are studied at the cooperating Institutes at [Vienna University of Technology](#).

Das innovative Projekt **3D-Technik** beschäftigt sich mit der Aufnahme dreidimensionaler Objekte, der Verarbeitung der Aufnahmedaten und dem dreidimensionalen 'Ausdrucken' (Fertigen von Prototypen) von Objekten. Die dabei zu lösenden technischen und algorithmischen Probleme werden an verschiedenen kooperierenden Instituten der [Technischen Universität Wien](#) behandelt. Ein Schlüssepunkt dabei ist die Aufnahme realistischer Daten und eine direkte Verifizierung der eigenen Algorithmen.

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## Participating Research Groups

- Geometric Modeling and Industrial Geometry
  - Pattern Recognition and Image Processing
  - Institute of Photogrammetry and Remote Sensing
  - Institute of Computer Graphics
  - Institute of Architectural Sciences
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## Research Topics

- 3D shape recognition and reconstruction
  - Registration and industrial inspection
  - Architectural design
  - Virtual reconstruction in archaeology
  - Geometric processing of 3D laser scanner data
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## Commercial Hardware at TU Vienna



3D-Scanner VI-900



Rotary Stage Isel RF1



3D-Plotter Dimension



3D-Scanner Riegl LMS-Z420i

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## 3D Models from Laserscanner Data

For scientific purposes we provide some of the data we have scanned using the Minolta VIVID-900 3D laserscanner and an Isel RF1 rotary stage. The point set surfaces were triangulated and contain on average 1/4-1/2 million points and 1/2-1 million triangles. You can download the triangulated 3D models in OBJ format from  
<http://www.geometrie.tuwien.ac.at/3dtechnik/>



[woody.zip](#)  
(1.9 MB)



[fold.zip](#)  
(4.6 MB)



[tower.zip](#)  
(2.7 MB)



[snakewoman.zip](#) (2.7 MB)



[indian.zip](#) (4.6 MB)



[milkbottle.zip](#) (4.1 MB)



[matthias\\_head.zip](#) (3.4 MB)



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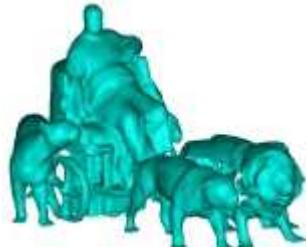
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[fp16\\_501.zip](#) (10.5 MB)



[cat.zip](#) (9.4 MB)



[marcanton.zip](#) (2 MB)

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## Selected Scientific Publications 2004

- Pottmann, H., Leopoldseder, S., Hofer, M., Steiner, T., Wang, W.: [Industrial Geometry: Recent Advances and Applications in CAD](#). Computer-Aided Design Appl. 1, 2004, pp. 513-522.
  - Mitra, N.J., Gelfand, N., Pottmann, H., and Guibas, L.: [Registration of Point Cloud Data from a Geometric Optimization Perspective](#), Eurographics Symposium on Geometry Processing, R.Scopigno and D.Zorin (eds.), 2004, pp. 23-32.
  - Peternell, M.: [Developable Surface Fitting to Point Clouds](#). Computer Aided Geometric Design 21, 2004, pp. 785-803.
  - Hofer, M., Pottmann, H.: [Energy-Minimizing Splines in Manifolds](#). Transactions on Graphics 23(3), 2004, pp. 284-293 (Proceedings of ACM SIGGRAPH 2004).
  - Pottmann, H., Leopoldseder, S., Hofer, M.: [Registration without ICP](#). Computer Vision and Image Understanding 95(1), 2004, pp. 54-71.
  - Pottmann, H., Steiner, T., Hofer, M., Haider, C., Hanbury, A.: [The Isophotic Metric and its Application to Feature Sensitive Morphology on Surfaces](#), In T. Pajdla and J. Matas, editors, Computer Vision - ECCV 2004, Part IV, volume 3024 of Lecture Notes in Computer Science, pp. 560-572, Springer, 2004.
  - Pottmann, H., Hofer, M., Odehnal, B., Wallner, J.: [Line Geometry for 3D Shape Understanding and Reconstruction](#), In T. Pajdla and J. Matas, editors, Computer Vision - ECCV 2004, Part I, volume 3021 of Lecture Notes in Computer Science, pp. 297-309, Springer, 2004.
  - Peternell, M.: [Recognition and Reconstruction of Developable Surfaces from Point Clouds](#), Proceedings of 'Geometric Modeling and Processing 2004', Beijing, China, pp. 301-310.
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## Related Courses at TU Vienna 2004/2005

- [Geometrie in der Technik](#) (Lehramtstudium "Darstellende Geometrie")
  - [Erschließung neuer Geometrien für Architekten](#)
  - [3D Computer Vision](#)
  - [Geometrie für Informatiker](#)
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We are proud of supporting the 3D Scanning of one Pegasus statue on the roof of the [Vienna State Opera](#) and of the head of a boy from the [Vienna Boys' Choir](#).

