TECHNISCHE UNIVERSITÄT WIEN
Institut für Computergraphik und Algorithmen
Arbeitsbereich für Computergraphik

OESTERREICHISCHE COMPUTER GESELLSCHAFT
AUSTRIAN COMPUTER SOCIETY

laden gemeinsam zum

GASTVORTRAG

Michael Wand
Max-Planck Institut Informatik and
Saarland University

“Computing and Structuring Shape Correspondences”

Abstract:

The talk will discuss recent work that has been done within the "Statistical Geometry Processing" group at MPI Informatics and Saarland University. We are working on "shape understanding" algorithms, i.e., algorithms that aim at discovering structure in geometric data sets and utilize it for analysis and modeling. Humans understand shapes already at an intuitive level. However, finding a formal model that explains "structure" in shapes to a certain extend is a major scientific challenge. In addition to being able to capture meaningful aspects, the models also need to be simple enough to permit efficient and robust algorithms for discovering such structure in data.

The talk will focus on correspondence analysis as one approach to this problem: First, we establish correspondences between shapes, i.e., detect pieces of geometry that are essentially similar and relate these to each other. I will discuss various techniques to efficiently and robustly compute correspondences between shapes, allowing for different types of invariance. Second, we can go up one level of abstraction and look at the structure of the obtained correspondences: Assuming we have discovered multiple, potentially overlapping pairs of regions of equivalence within a piece of geometry, what does this tell us about the shape? This question is addressed by "inverse procedural modeling" techniques that characterize families of shapes that are similar to an example piece. We use correspondence information to derive shapedocking rules and, alternatively, algebraic invariants to describe such shape spaces in a constructive manner.

Biography:

Michael Wand is currently a senior scientist and junior research group leader at the Max-Planck Institut Informatik and Saarland University. He received his Ph.D. degree from Tübingen University in 2004 and his Diploma in Computer Science from Paderborn University in 2000. From 2005 to 2007, he was a postdoc at Stanford University. His research interests include statistical techniques for geometry processing and geometric correspondence problems.

Datum: 22. Juni 2012, 10:30 Uhr s.t.
Ort: TU Wien, Favoritenstr. 9, Stiege 1, 5. Stock, Seminarraum E186