Extraction of the Quad Layout of a Triangle Mesh
Guided by its Curve-Skeleton and Skeleton Editing

Abstract: Starting from the triangle mesh of a digital shape, mainly an articulated object, we produce a coarse quad layout that can be used in character modeling and animation. Our quad layout follows the intrinsic object structure described by its curve skeleton; it contains few irregular vertices of low degree; it can be immediately refined into a semi-regular quad mesh; it provides a structured domain for UV-mapping and parametrization. Our method is fast, one-click and it does not require any parameter setting. The user can steer and refine the process through simple interactive tools during the construction of the quad layout. We supplement this tool with an interactive curve-skeleton editor.

Short bio: Riccardo Scateni is Associate Professor of Computer Science at the University of Cagliari since 2001. Previously he had held research and management positions at IBM Research USA, CERFACS (Toulouse, France) and CRS4 in Cagliari. His main research interests are currently focused on topics of geometry processing, in particular the research of morphological, topological and geometric properties characterizing the triangle meshes. The goals are: to classify, store and retrieve shapes from databases of virtual objects; to represent in a compact way 3D shapes; to help animator in manipulating them. He was, in the past, also active as a researcher in the fields of scientific visualization and, in particular, medical imaging. He has taught and teaches courses in Computer Graphics, Object-Oriented Programming, Formal Languages and Geometric Algorithms. He was a member of the Academic Senate of the University of Cagliari, vice president of the National Association of Computer Science Professor (GRIN) and is currently a member of the CUN (National University Council).