Technion-Israel Institute of Technology

Computer Science Department

Center for Graphics and Geometric Computing

CGGC Seminar – M.Sc. Talk

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Metric transformation through local linear maps: application to frame field generation

Generic frame fields are important for many applications in computer graphics such as texture mapping and quadrangulation. The vast majority of existing approaches rely on computing an intermediate metric induced by an ambient Euclidean space, thus increasing the complexity and restricting the space of possible metrics. Other, intrinsic approaches, rely on a rather complicated formulation and require numeric approximations. We propose an intrinsic approach that obviates the necessity of an embedding and has a simple formulation. We compute a new Riemannian metric that results from warping a surface by local linear transformations and impose a compatibility constraint to ensure that the resulting space is a metric space and a polytope. This allows for a larger space of solutions than is possible to accommodate in the three-dimensional Euclidean space as well as a simple formulation. We show how to adapt existing methods for designing smooth vector fields for this framework and demonstrate the robustness of the algorithm relatively to extrinsic approaches.

Advisor: Miri Ben-Chen

The lecture will be held on Tuesday, 02.08.2016, at 14:00, Taub 401

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