

Conformal Geometry Applied in Computer Science

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With the development of computational methodologies and computing hardwares, conformal geometry plays more and more important roles in computer science. Many problems with fundamental importance in computer science are tackled using conformal geometry.

In this talk, general conformal geometric algorithms will be discussed, including circle packing, heat flow for harmonic maps, finite element approximation for Riemann-Cauchy equation, holomorphic forms based on Hodge theory and discrete surface Ricci flow.

Important applications will be introduced, such as global conformal parameterizations in computer graphics, shape matching and classification based in computer vision, manifold splines in geometric modeling, brain mapping and colon flattening in medical imaging. Some open problems are also addressed.

