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Computational Line Geometry

The geometry of lines occurs naturally in such different areas as sculptured surface machining, computation of offsets and medial axes, surface reconstruction for reverse engineering, geometrical optics, kinematics and motion design, and modeling of developable surfaces. This book covers line geometry from various viewpoints and aims towards computation and visualization. Besides applications, it contains a tutorial on projective geometry and an introduction into the theory of smooth and algebraic manifolds of lines. It will be useful to researchers, graduate students, and anyone interested either in the theory or in computational aspects in general, or in applications in particular.