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Visibility: Theory and Application

Computation Geometry is a recent branch in the field of Computer Science with roots established in ancient times, exploring geometric and numeric problems which arise from the constraints imposed by modern computing methods. Computational Geometry further serves as the foundation for a wealth of real-world applications reliant on efficient and elegant solutions.

In this talk, I will begin by presenting an overview of the field and my various contributions to it, with emphasis on visibility and pursuit-evasion problems These topics have significant research and industry interest due to their numerous applications, including wireless communications, robotics, computer graphics, and surveillance. Following this, I will discuss the interdisciplinary works which arise from close collaborations with engineering and machine learning groups, such as medical imaging, additive manufacturing, geometric deep learning.

The importance of the link between theory and application cannot be understated, as it is through the study of the theory that we can improve and expand the reach of applications; it is also through the present challenges faced in applications by which theoretical research can be informed. My ultimate goal is to extend the reach and relevance of Computational Geometry, and further its integration in new domains.