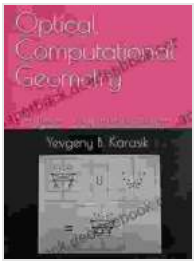
Solving Problems Of Computational Geometry By Means Of Geometric Constructions

Computational geometry is a branch of computer science that deals with the representation and manipulation of geometric objects in a computer. It has applications in many fields, such as computer graphics, robotics, and geographic information systems.

One of the most fundamental problems in computational geometry is to find the intersection of two geometric objects. This problem can be solved using a variety of methods, including analytic methods, numerical methods, and geometric constructions.



Optical Computational Geometry: Solving problems of computational geometry by means of geometric constructions performed optically by Yevgeny B. Karasik

★★★★★ 5 out of 5

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Geometric constructions are a set of rules that can be used to construct new geometric objects from given ones. These rules are based on the axioms of Euclidean geometry, and they can be used to construct a wide variety of geometric objects, including lines, circles, and polygons.

Geometric constructions can be used to solve a variety of problems in computational geometry. For example, they can be used to find the intersection of two lines, the intersection of a line and a circle, or the intersection of two circles.

Geometric constructions are a powerful tool for solving problems in computational geometry. They are simple to understand and use, and they can be used to solve a wide variety of problems.

Advantages of using geometric constructions

There are several advantages to using geometric constructions to solve problems in computational geometry.

- Geometric constructions are simple to understand and use. The rules of geometric construction are based on the axioms of Euclidean geometry, which are familiar to most people.
- Geometric constructions are efficient. Geometric constructions can be performed in a finite number of steps, and the number of steps required is typically small.
- Geometric constructions are accurate. Geometric constructions are based on the axioms of Euclidean geometry, which are true in the real world. This means that geometric constructions can be used to solve problems accurately.

Disadvantages of using geometric constructions

There are also some disadvantages to using geometric constructions to solve problems in computational geometry.

- Geometric constructions can be difficult to visualize. Geometric constructions can be difficult to visualize, especially for complex objects.
- Geometric constructions can be error-prone. Geometric constructions can be error-prone, especially if they are performed manually.
- Geometric constructions can be limited. Geometric constructions can be limited in the types of problems that they can solve.

Applications of geometric constructions

Geometric constructions have a wide variety of applications in computational geometry. Some of the most common applications include:

- Finding the intersection of two geometric objects
- Computing the area of a geometric object
- Computing the volume of a geometric object
- Generating random geometric objects
- Solving geometric puzzles

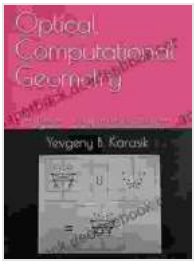
Geometric constructions are a powerful tool for solving problems in computational geometry. They are simple to understand and use, they are efficient, and they are accurate. However, geometric constructions can be difficult to visualize, they can be error-prone, and they can be limited in the types of problems that they can solve.

Despite these limitations, geometric constructions remain a valuable tool for solving problems in computational geometry. They are particularly useful

for solving problems that are difficult to solve using other methods.

Additional resources

- Computational geometry on Wikipedia
- Computational geometry at Johns Hopkins University
- Geometric constructions in computational geometry



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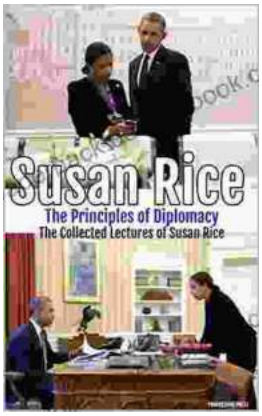

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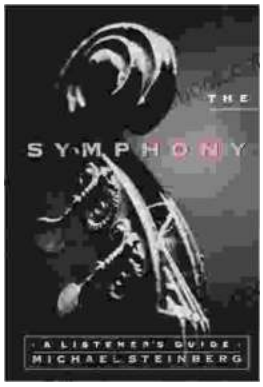

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