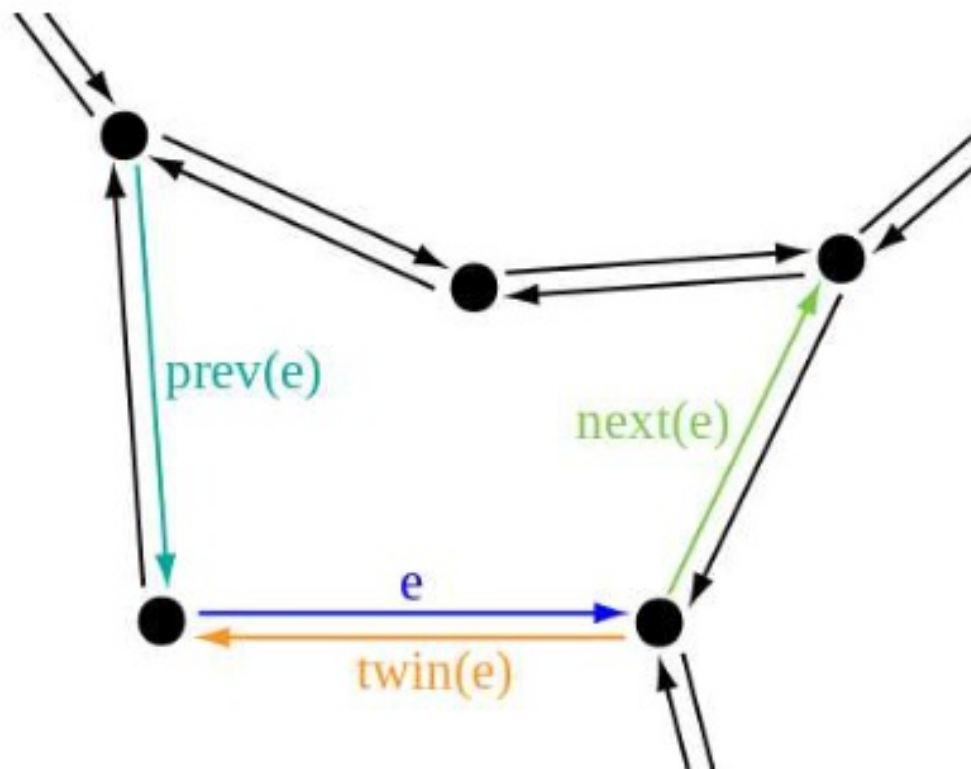


Chapter 3

The Geometry of Virtual Worlds

3.1 Geometric models

- 3D Euclidean space w/ Cartesian coordinates
 - let R^3 denote real world, using (x,y,z)
- **Data Structures**
 - Geometric models usually encoded in clever data structures
 - **Doubly connected edge list__ aka __Half-edge data structure**
 - Three kinds of data elements: *faces*, *edges*, and *vertices*
 - represent 2, 1, and 0-dimensional parts of model



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- Figure 3.3: Part of double connected edge list shown for face w/ five edges on boundary. Each half-edge structure e stores pointers to the next and prev edges along face boundary. Also stores pointer to its twin half-edge, which is part of boundary of adjacent face)