The nearest point P_k from a point list L' to any given point A is that point whose Euclidian distance $|\overline{P_k A}|$ is the minimum of all other points in the list L'.

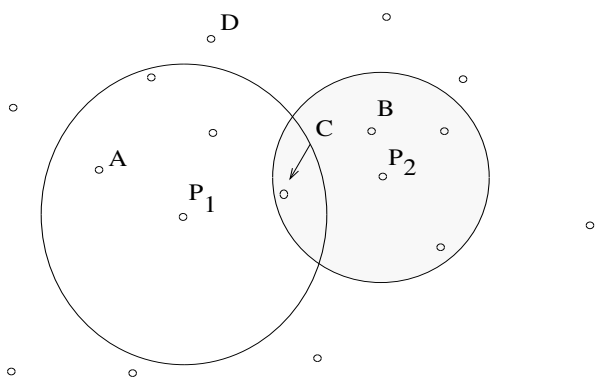

Figure 1: Local points

A local point is any point that is in the immediate neighborhood of a point A. The extent of the immediate neighborhood surrounding A is defined by considering it to be a list L' of m points that are the m nearest points to A. These local points play an important role in increasing the speed of surface construction. The actual number, m, of points that are considered local to a given point A, and its effect on the surface construction will be considered later. Figure 1 (where $m = 4$) illustrates several aspects of local points. First the physical extent of the local neighborhood depends on the number of points included in it, and it may not be the same for two reference points (as is the case for P_1 and P_2). Second, for any two given reference points (P_1 and P_2) there may be points (for example C) local to both. Finally, local points will not necessarily be uniformly distributed in the immediate neighborhood as is demonstrated by the distribution of local points about P_1.

An edge is a line connecting two points P_i and P_j. An edge is usually denoted by: $\overline{P_i P_j}$, this notation also implies a vector $\vec{v}$ directed from P_i to P_j. Associated with each edge are two other nearby peripheral points (T_k and T_m in Figure 2) which define the two triangles sharing the edge. Edges also have some peripheral data that is used to keep track of the exterior of the object being reconstructed.

All edges have two and only two end points. When a group of $n \geq 3$ points are found to be co-linear these n points will be treated as defining $n - 1$ edges rather than just one edge. Once the surface is completed all edges will have two and only two triangles attached to them. These two triangles are defined by the two points P_i and P_j on the edge which they share and the two points T_k and T_m that are nearby (defined below) to both of the edge's end points. It is for this reason that the terms: "nearby points" and "triangles" may be used somewhat interchangeably.