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Temporarily Separating Overlapping Objects for Easier Selection

Luca Prasso

Stefan Weiker

Robert Carl Jagnow

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Temporarily Separating Overlapping Objects for Easier Selection

Selecting an object in a graphical user interface may be difficult when the object is partially or completely overlapped by another object. For example, clicking on a small object that is mostly overlapped by a larger object may be difficult as a user may accidentally click on the larger object when trying to click on the smaller object. This difficulty may exist in graphical user interfaces of various types including 2-dimensional, 3-dimensional, virtual reality, and augmented interfaces.

A system may address this difficulty by temporarily separating overlapping objects when a selection tool, e.g., a cursor or a controller, controlled by a user moves near the overlapping objects. For example, when a user moves a cursor within ten pixels of a small object or a larger object partially overlapping the small object, the system may move the small object left and the larger object right so that the two objects no longer overlap. Separating the overlapping objects may enable a user to more easily select an object as the user may be less likely to accidentally select another object and more easily position the selection tool over the object when selecting the object.

The system may return the separated objects back to their original overlapping positions once one of the objects is selected or a selection tool controlled by the user is no longer near the overlapping objects. For example, once the small object is selected or once the user moves a cursor to be more than ten pixel away from the small object or the larger object, the objects may be returned to their original overlapping positions.

In some implementations, the system forms a bounding shape around overlapping objects. For example, the system may detect that a small object and larger object are overlapping, and create an oval bounding shape that entirely encompasses both objects. The bounding shape may be a variety of shapes including a circle, oval, polygon, or other shapes. The system may detect when a selection tool is moved within the bounding shape and upon detection, separate the objects. When the system separates the objects the system may update the bounding shape so that the bounding shape still encompasses all the objects. For example, the bounding shape may be doubled in size. The system may further detect when a selection tool is moved out of the updated bounding shape and upon detection, return the objects back to their overlapping positions and return the bounding shape to the bounding shape's original size.

In a more detailed example, FIG. 1A below shows five objects that are partially overlapping where a selection tool is shown on the left, the five objects are shown on the right, and a bounding shape is a circle surrounding the five objects and to the right of the selection tool.

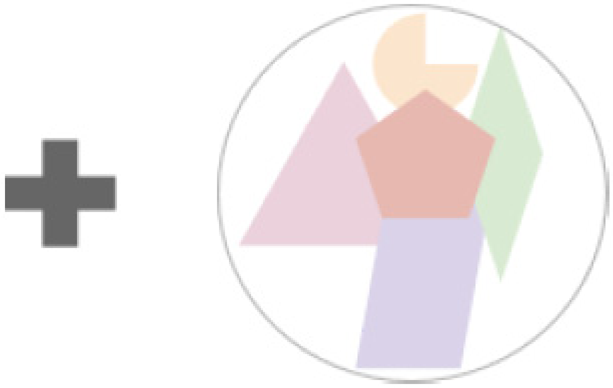

FIG. 1A

FIG. 1B below shows how when the selection tool is moved inside the bounding box, the five objects are repelled from one another so that they are no longer overlapping and the bounding shape is enlarged so that it still encompasses all the objects.

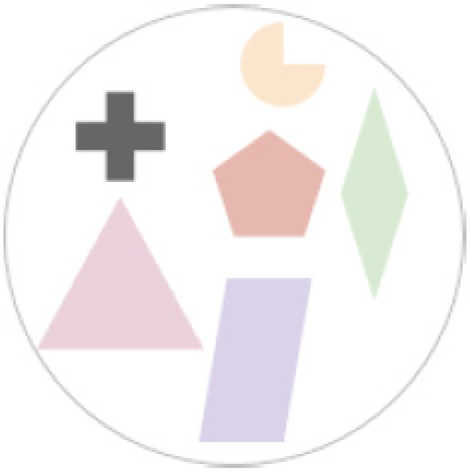

FIG. 1B

FIG. 1C below shows how separating the objects may enable a user to easily move the selection tool to select one of the objects, e.g., a pentagon that was in the middle of the overlapping objects.

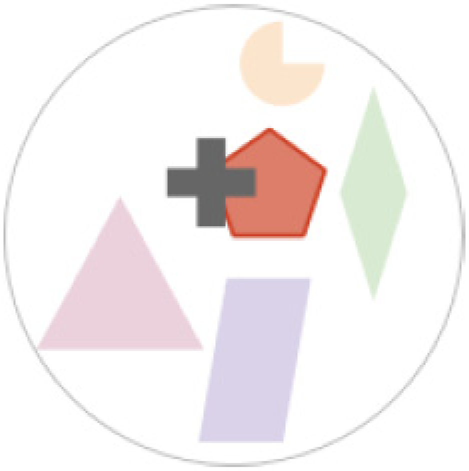

FIG. 1C

FIG. 1D below shows how once one of the separated objects are selected, the objects may be returned back to their overlapping positions and the bounding shape returned to the bounding shape's original size

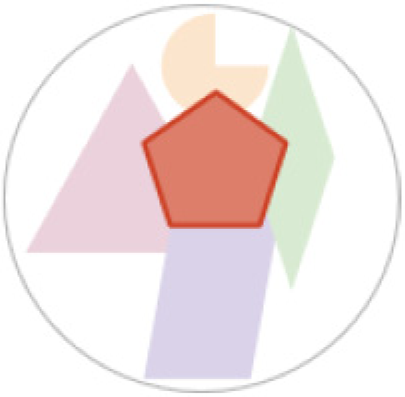

FIG. 1D

FIG. 1E below shows how once a selection tool is moved out of the bounding shape without a selection of an object, the objects also return to their overlapping positions and the bounding shape returns to the bounding shape's original size.

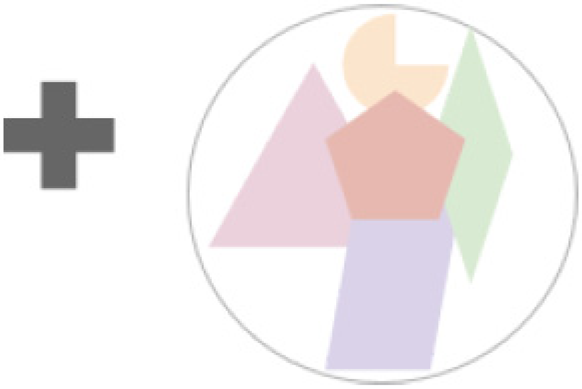

FIG. 1E

The system may determine where to position the objects when the objects separate using a variety of techniques. For example, the system may determine the center of each object and cause the centers of the objects to repel each other until the objects no longer overlap. In another example, the system may determine an aggregate center for all of the objects, and move the center of each object from the aggregate center until no object overlaps.

In some implementations, the system may also separate objects based on metadata describing the objects. For example, the system may analyze metadata describing five overlapping objects and determine that the five overlapping objects include a set of two objects that are related to another and a set of three other objects that are related to one another. In response, the system may keep the objects within each set of objects overlapping while moving the sets apart from each other so the objects of different sets no longer overlap each other.

In some implementations, the system may also enable users to control whether overlapping objects will separate when a selection tool is moved near the objects. For example, the system may have a mode that is toggled based on selecting a graphical user interface element. In another example, the system may have a mode that is toggled based on whether a user is holding down a physical button.

ABSTRACT

A system is described that facilitates selection of an object from among multiple overlapping objects displayed in a graphical user interface. The system may detect when a selection tool is moved near overlapping objects. In response to such a detection, the system may reposition the objects such that the objects are no longer overlapping. Once the system detects that an object is selected or that a selection tool is no longer near the objects, the system may return the objects to their original overlapping positions.