[0015] FIG. 5B is a graph that relates the principal components of a set of data to a null space of the set of data; and

[0016] FIG. 6 is a flow diagram of one embodiment of a method for controlling a system.

DETAILED DESCRIPTION

[0017] As discussed above, a physically independent signal may not always be appropriate for providing commands to a system due to the difficulties associated with users providing separate independent commands when they are otherwise occupied with performing another task. Further, in instances where a system may be automatically controlled to some extent, while also accepting commands from a user, the criteria associated with selecting appropriate control input modalities for a user may also change. Accordingly, in some instances, rather than using a physically independent signal a user may separately operate, in some applications it may be desirable for a system to be controlled using one or more signals that may be provided to a system while a user is otherwise occupied in performing a task in a manner that is intuitive, repeatable, and voluntary.

[0018] In view of the above, the inventors have recognized and appreciated the benefits associated with systems that enable a user to provide commands to a system using the combination of forces applied by a plurality of body parts that may be otherwise occupied in performing a task. Specifically, commands may be provided by exploiting a type of redundancy in forces that the user may apply while engaged in performing one or more tasks. For example, a user may provide commands to a system through sensors disposed on the hands or other portion of the body even while the hands of the user are occupied in a task. In one such embodiment, if the task involves manipulating a power tool or other object, simply holding the power tool may use a minimum grasping force, where the grasping force may be the sum of forces generated by individual fingers. Accordingly, the sum of the forces may satisfy a certain condition, such as providing enough force to ensure that the power tool does not slip. However, the distribution of applied forces among multiple fingers may still be arbitrary. This implies that a user may still provide commands with a distribution of finger forces while holding, or otherwise interacting with, an object. This sensing of different combinations of forces applied by different portions of a user's body during performance of a