

Grasp Taxonomy

Structure

The grasps defined by one author are all located in the same row. If two grips from different papers are the same, they were put in the same column.

On top of every column one can find some specific information on that grasp:

- Opposition Type
- Virtual Finger assignments
- Name of the grasp used later to derive a taxonomy
- Given unique number of that grasp type
- Number of times the grasp has been named in literature, respectively number of entries in that column.

Colour Code:

	Grips marked orange were defined as power grip by the author. (cf. Napier 1956)
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	Grips marked green were defined as precision grip by the author. (cf. Napier 1956)
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	Grips marked green/orange were defined as intermediate (between power and precision) grip by the author. (cf. Kamakura 1980)

	Red Grasps were not used for further evaluation because they did not fit into the scope of the work.
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Opposition Type:

According to Iberall 1987 the term *opposition* refers to the basic direction in which a human hand can apply forces:

- *Pad opposition*: The forces are applied between the finger pads of the hand, along a direction roughly parallel to the distal/proximal axis.
- *Palm opposition*: The palm of the hand is used as one side of the clamp, the other side is formed by one or more digits. The axis along which forces are being applied is roughly perpendicular to the palm.
- *Side opposition*: The side of one or more fingers is used to hold the object in the hand. The direction of force is roughly parallel to the radial/ulnar axis.

Virtual Finger (VF)

In the concept of virtual fingers (Iberall 1997), two of them are working against each other to create the force necessary to securely hold the object. The palm and/or the fingers can be mapped into a virtual finger defining its “size”. In pad and in most side opposition grasps the thumb is VF1 and one or more digits are mapped into VF2. In palm opposition the palm of the hand becomes VF1.

There are some abbreviations used:

- **P** Palm
- **1-5** Thumb - little finger
- **VF1** Virtual finger 1
- **VF2** Virtual finger 2
- **VF3** Virtual finger 3, used to opposed a task related force or momentum

Literature

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