Learn about the digital representation of the robot hardware in KUKA|prc

Link: https://youtu.be/s1VvnMYnjhE
TOOLPATH GENERATION

How do you program robot movement? Why are planes so essential? Which commands are suitable for what?

Mesh as .obj
Select a Mesh that represents your Tool-Geometry

Robot Setup
Executing the command with the set robot and tool, simulating the movement.

Input X-, Y- and Z-Values to define point

Add plane construction and movement command in here!

Project: Robot Basics
There are multiple ways in Grasshopper to construct planes. One very simple way of doing so is explained below:

Use the predefined components to generate “standard” planes being the xy-, xz-, and yz-plane.
If you use one of these components, a plane will show up at the origin of your Rhino viewport. To locate the plane at the spot where you want it to be, all you need to do is to change the origin of the chosen plane. You can do so by first creating a point or setting and selecting a point in Rhino and then plugging it into the only possible input of your chosen plane component. Now you can plug the plane component into any movement command and proceed as explained in the General Core Video to generate a robot program.

In this way, you have the flexibility of moving around the location of your plane but are bound to the 3 different orientations of the predefined planes.
CONSTRUCT PLANES  |  XY XZ YZ

**XY Plane**
Creating a horizontal plane at the origin point as orientation for the robot tool.

**XZ Plane**
Creating a vertical plane at the origin point as orientation for the robot tool.

**YZ Plane**
Creating a vertical plane at the origin point as orientation for the robot tool.
If it is not enough to choose a standard plane, you can go one step ahead and rotate such a plane in any pursued direction. Here you see how the 3 different planes are rotated in 3 different directions. But watch out: To be able to define the rotation direction again standard planes are used for spatial description. If you want to see the rotation in action, scroll to the video elements below. As always, there are multiple other ways of rotating a plane in GH - see transformation operations.
**MODIFY PLANES  I  ROTATION**

**Plane 1**
This plane will be rotated

**Plane 2**
Plane 1 will be rotated around the normal-vector of this plane.

**Rotate**
Rotating the XY-plane at the origin point in different directions depending which plane is used as rotation plane.

**Angle**

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**Project : Robot Basics**

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**DYNAMO ALGORITHM**
What does the simulation show? What can you learn from the analysis tool? How do you react on this information?

**Settings**
Click on settings on the KUKA pcr core component

**Analysis**
Select Analysis tab on the top of the dialog box

Use the following link to view sample simulation:
https://youtu.be/nqZkNJs1F3Q
How do you transfer setup data of tool and base into the robot program? Where do you get the information from?

Link: https://youtu.be/A22PwFrZxxk
How do you export your robot program so it can be transferred to the robot?

**Output**
Select output directory and click apply. Exit application. The file will be continuously updated as changes are made in the algorithm.

**File**
Is exported at the selected output directory .src-format. To explore the contents of file open using notepad.

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**Settings**
Click on settings on the KUKA I prc core component.

**KUKA I prc**

Export
Transfer file to robot controller for production.