

URDF Robot Model Usage and Visualization Tutorial

1. Robot Types

- 1.1 W1 (Wheeled Humanoid) Wheeled Humanoid Robot
- 1.2 CobotMagic Dual-Arm Robot (to be determined)
- 1.3 BranCo Hand (to be determined)

2. Visualization Tool

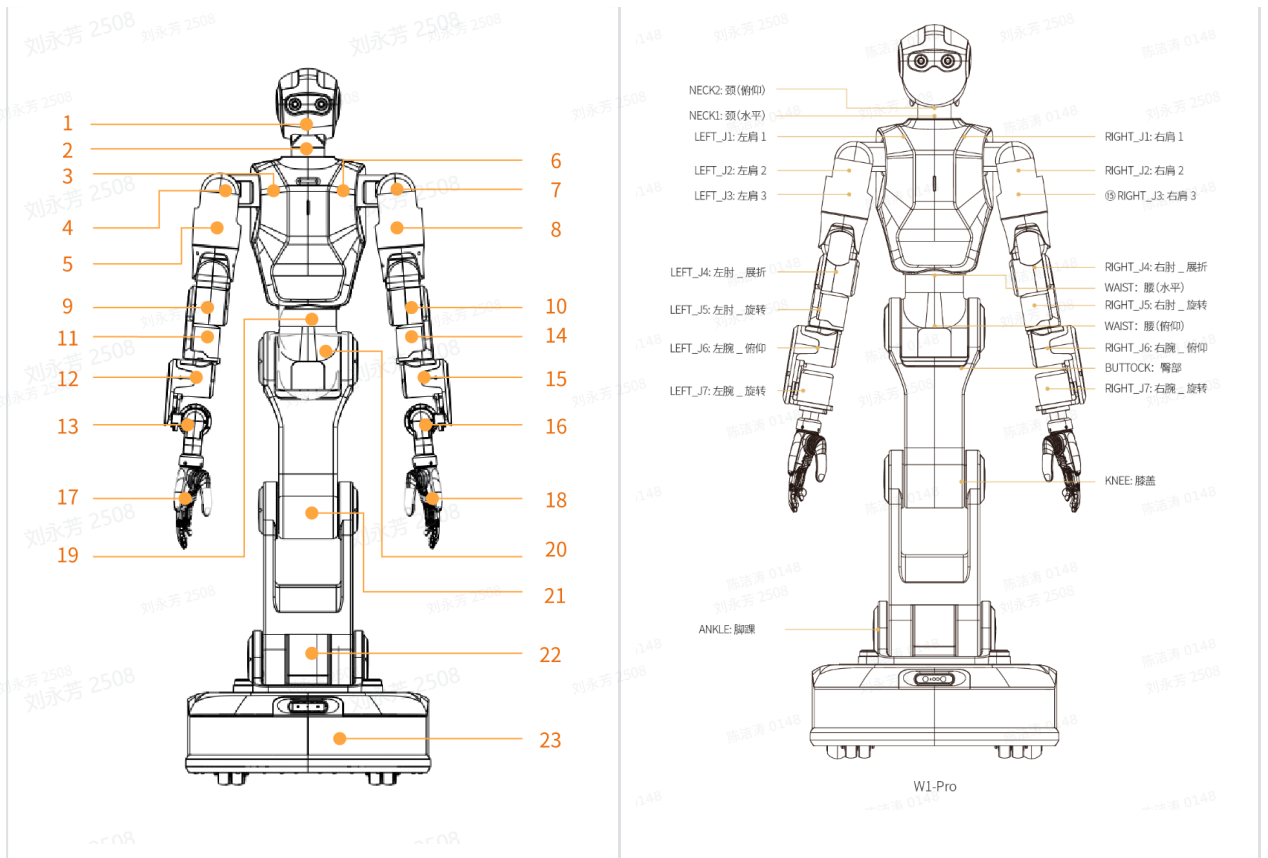
- 2.1 Online Website Visualization Tool (Recommended for Beginners)
- 2.2 VSCode Plugin Tool

1. Robot Types

1.1 W1 (Wheeled Humanoid) Wheeled Humanoid Robot

- Description: This is a robot that combines mobility (wheeled chassis) and fine manipulation capabilities (anthropomorphic upper body). It has an upper body with arms and is an ideal platform for researching Mobile Manipulation.
- Variants: This model offers two upper body configurations:
 - Anthropomorphic Arm (V02_1): The arm design is closer to the morphology and degrees of freedom (DOF) of a human arm, suitable for tasks requiring high flexibility.
 - Industrial Arm (V02_2): The arm may be more inclined towards the structure of an industrial robotic arm, emphasizing precision, stiffness, and load capacity.

Anthropomorphic Arm (V02_1)	Industrial Arm (V02_2)



Embodchain Data Download Method and Path

Method:

代码块

```

1  # 导入数据获取函数
2  from embodychain.data import get_data_path
3
4  # 获取【拟人手臂】版本的 W1 模型路径
5  urdf_path_humanoid_arm =
6  get_data_path("DexforceW1V02/DexforceW1_v02_1.urdf")
7  print(f"拟人手臂 URDF 路径: {urdf_path_humanoid_arm}") # 获取【工业手臂】
8  # 获取【工业手臂】版本的 W1 模型路径
9  urdf_path_industrial_arm =
10 get_data_path("DexforceW1V02/DexforceW1_v02_2.urdf")
11 print(f"工业手臂 URDF 路径: {urdf_path_industrial_arm}")

```

Path

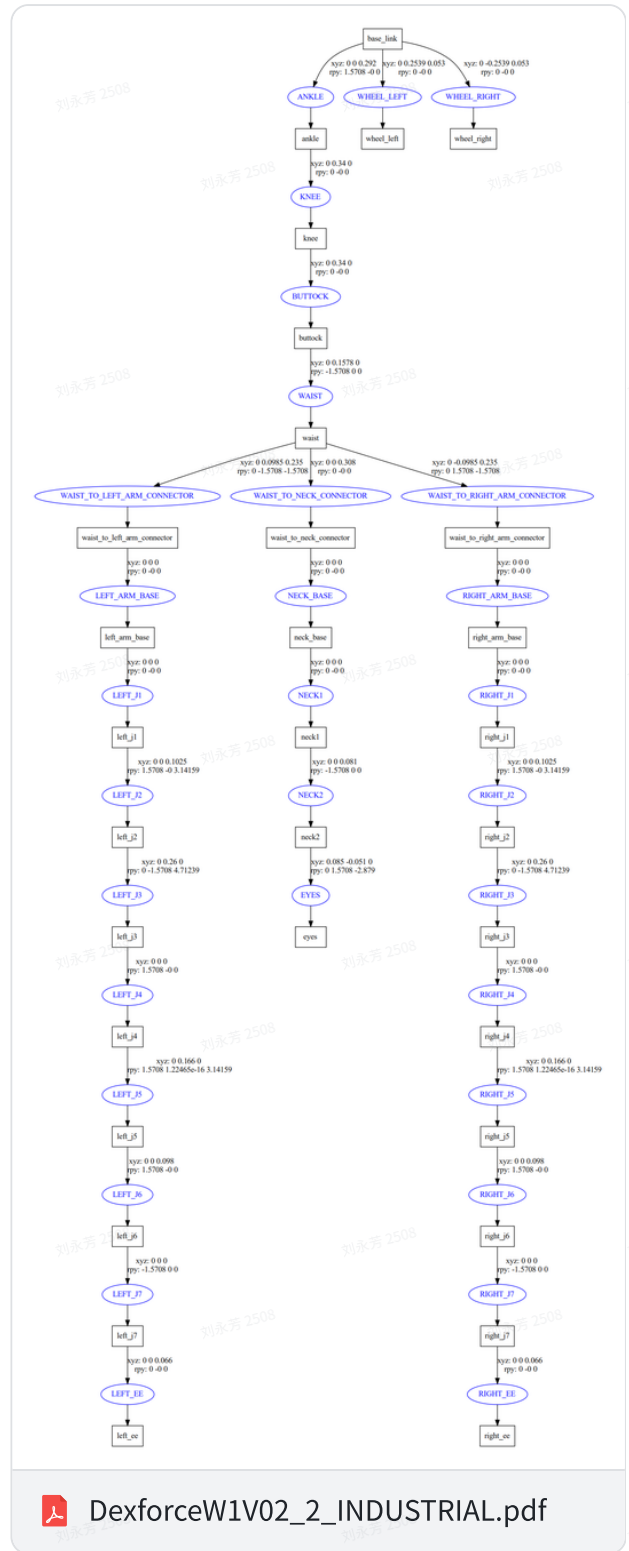
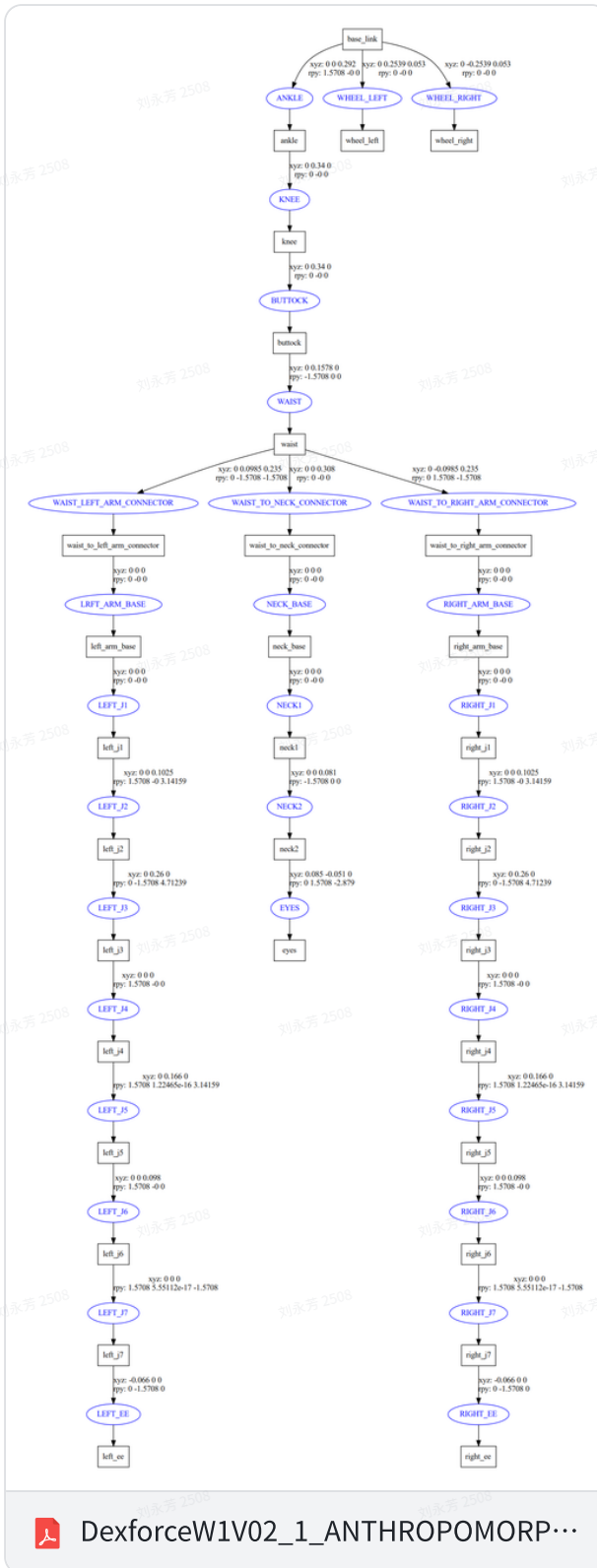
代码块

```

1  # 拟人手臂
2  ~/embodychain_data/extract/DexforceW1V02/DexforceW1_v02_1.urdf
3  # 工业手臂

```

URDF Tree Diagram



1.2 CobotMagic Dual-Arm Robot (to be determined)

1.3 BranCo Hand (to be determined)

2. Visualization Tool

2.1 Online Website Visualization Tool (Recommended for Beginners)

This is a very convenient and fast tool that does not require any installation.

Tool Address 1: <https://gkjohnson.github.io/urdf-loaders/javascript/example/bundle/index.html>

Tool Address 2: <https://urdf.d-robotics.cc/>



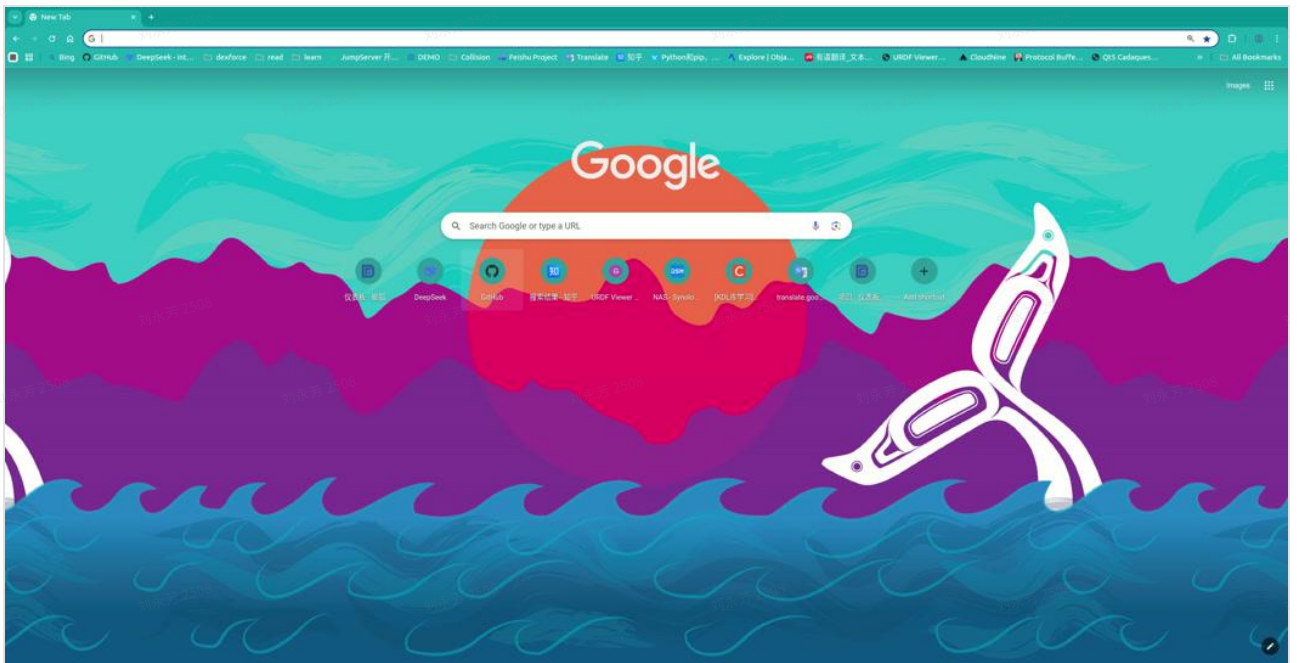
You can also use this online visualization website:

[URDF Studio - Professional Robot Design Platform | Robot Visual Design Platform](#)

■ Usage Steps:

1. Open the above URL
2. Prepare the model folder: Locate the model directory previously downloaded via `get_data_path` (e.g., `~/embodychain_data/extract/DexforceW1V02/`). Please ensure that this directory contains the `.urdf` file and the corresponding `meshes` folder, etc.
3. Drag and drop an entire folder: Drag and drop the entire `DexforceW1V02` folder directly from your file manager (such as Windows Explorer or Mac's Finder) into the browser window.
4. Select URDF file: After dragging and dropping, the page will pop up a file list. Please select the specific `.urdf` file you want to visualize (e.g., `DexforceW1_v02_1.urdf`) from the list.
5. The web page will automatically load and render the robot model.

■ Tutorial Video



2.2 VSCode Plugin Tool

If you are using VSCode for development, you can view the model in the VSCode editor.

- Plugin Name: `URDF Visualizer`
- Marketplace URL: <https://marketplace.visualstudio.com/items?itemName=morningfrog.urdf-visualizer>
- Installation Method:
 1. Open VSCode.
 2. Enter the Extension Marketplace (Ctrl+Shift+X).
 3. Type `URDF Visualizer` or `morningfrog.urdf-visualizer` in the search box.
 4. Find the plugin in the search results, click the `Install` button to install it.
- Usage method:
 1. Ensure the model file has been downloaded: First, ensure that the robot model has been downloaded locally via the `get_data_path` function.
 2. Open the URDF file in VSCode: Use VSCode to open the specific `.urdf` file (e.g., `DexforceW1_v02_2.urdf`).
 3. Start Preview:
 - Method A (Command Panel): Press `Ctrl + Shift + P` (Windows/Linux) or `Cmd + Shift + P` (Mac) to open the command panel, enter `URDF: Preview` and select `Urdf visualizer: Preview URDF/Xacro` command.

- Method B (right-click menu): Right-click in the open URDF file editor, and select **Preview URDF** from the pop-up menu.

4. A visualization panel will open next to the editor and display the robot model. Changes you make to the URDF file are usually automatically synchronized and updated to the preview view after saving.

■ Tutorial Video

