



**Machine Learning for Advanced Process Control Lab- Cyber Physical System Enabled**  
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# User Manual: Using the cstrazclient library

## Overview

This guide explains how to use the `cstrazclient` library to interact with Azure Digital Twins. You'll learn how to install dependencies, import the class, and send/receive data from five specific digital twins.

## Prerequisites

- Python 3.7 or higher
- Access to Azure Digital Twins instance from MLAPC lab
- Basic knowledge of Python



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## Step 1: Navigate to the cstrclient folder

Open a terminal and navigate inside the **cstrclient** folder (unzipped) , downloaded from the **Virtual Lab Access** section under [itarasu.com](https://itarasu.com)

## Step 2: Install the Library

Run

```
pip install .
```

To install the library on your pc.

## Step 3: Initialise the Client

Keep these lines of code at the top of your program

```
from cstrazclient import DigitalTwinsClientWrapper  
adt_url = "https://cstrtwin.api.sea.digitaltwins.azure.net"  
dt=DigitalTwinsClientWrapper(adt_url)
```

After running your code, you will be prompted to open a browser and enter a device code to authenticate. Share this code with the admin. This will be required every time the code runs.



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## Step 4: Sending data to the reactor twin

To send the value of pumps

```
dt.update_reactor_controls(heater1=50.0, pump_a=10.0, pump_b=5.0)
```

## Step 6: Reading Data (Update Values)

Use `get_all_temps()` to read temperature data from the twin. Then you can use the following keys to get specific data as per the example:

```
temps = dt.get_all_temperatures()

print(f"Reactor Temp: {temps.get('reactor')}")

print(f"Jacket Temp: {temps.get('jacket')}")

print(f"Feed A Temp: {temps.get('feedA')}")

print(f"Feed B Temp: {temps.get('feedB')}")
```

**Note: Refer to the `sample.py` file given in the folder to see an example and test your connection**

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