



Research Realms

A Collaboration Tool for Code and Mathematics

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Motivation

- Researchers are currently displaced from laboratories, hindering effective in-person collaboration
- Quantitative ideas are often highly detailed, and can be difficult to convey over text alone
- Mathematics can be especially difficult to format

Which would you rather look at?

$$f(x, \theta) = \theta * \sum_{i=0}^N \|x_i\|_2^2$$

$$f(x, \theta) = \theta \cdot \sum_{i=0}^N \|x_i\|_2^2$$

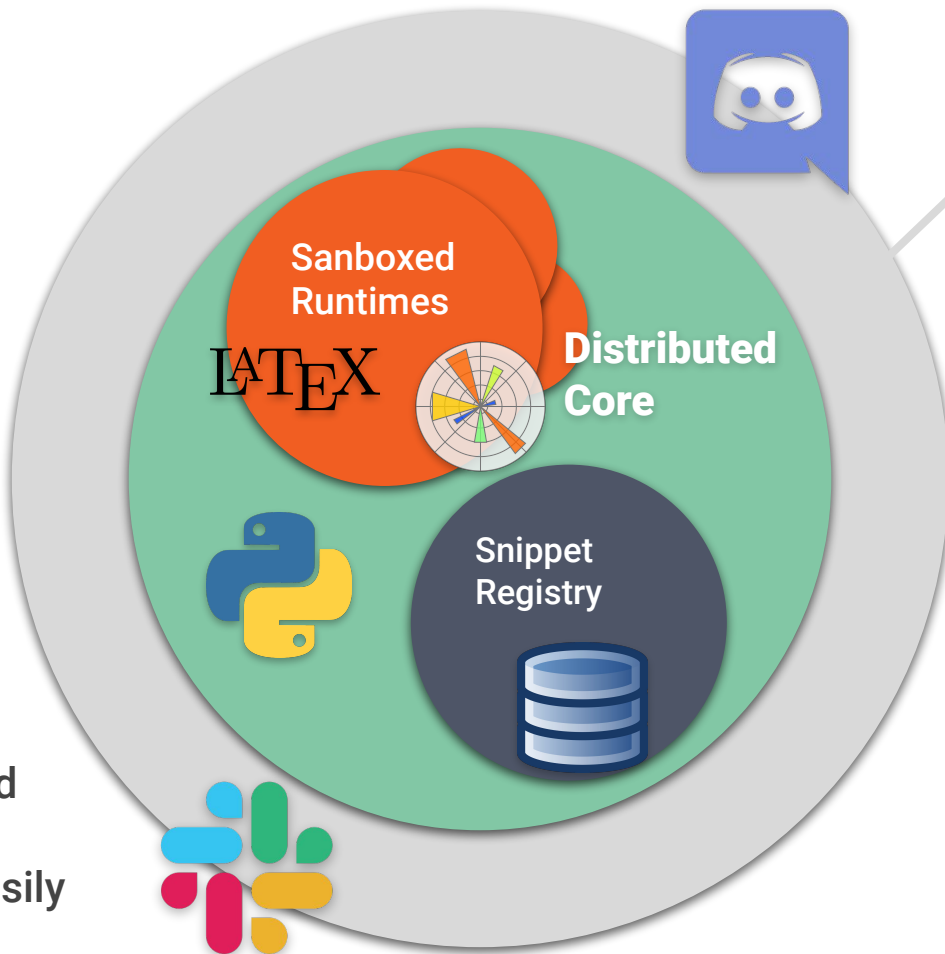


Introduction to Research Realms

- We aim to bring the **piecewise nature** of **Jupyter Notebooks** to the chat-room interface of Slack and Discord
- **Python** code can be **executed on the fly** in a consistent, containerized environment
- Users can also render **LaTeX** and **save code snippets**



Teams in disconnected
Environments use
ResearchRealms to easily
Share complex ideas.



Users connect to the RR
core using Slack or
Discord



Executor captures special idiomatics like `plt.show()` and renders image to tmp file to be delivered

Executor automatically captures all STDOUT and STDERR



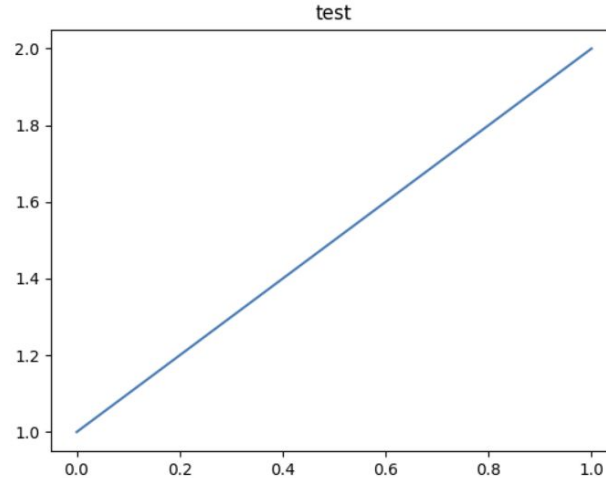
Today at 1:58 PM

!exec

```
import matplotlib.pyplot as plt
plt.figure()
plt.plot([1, 2])
plt.title("test")
plt.show()
print('How now, brown cow?')
```



ResearchRealms BOT Today at 1:58 PM



How now, brown cow?

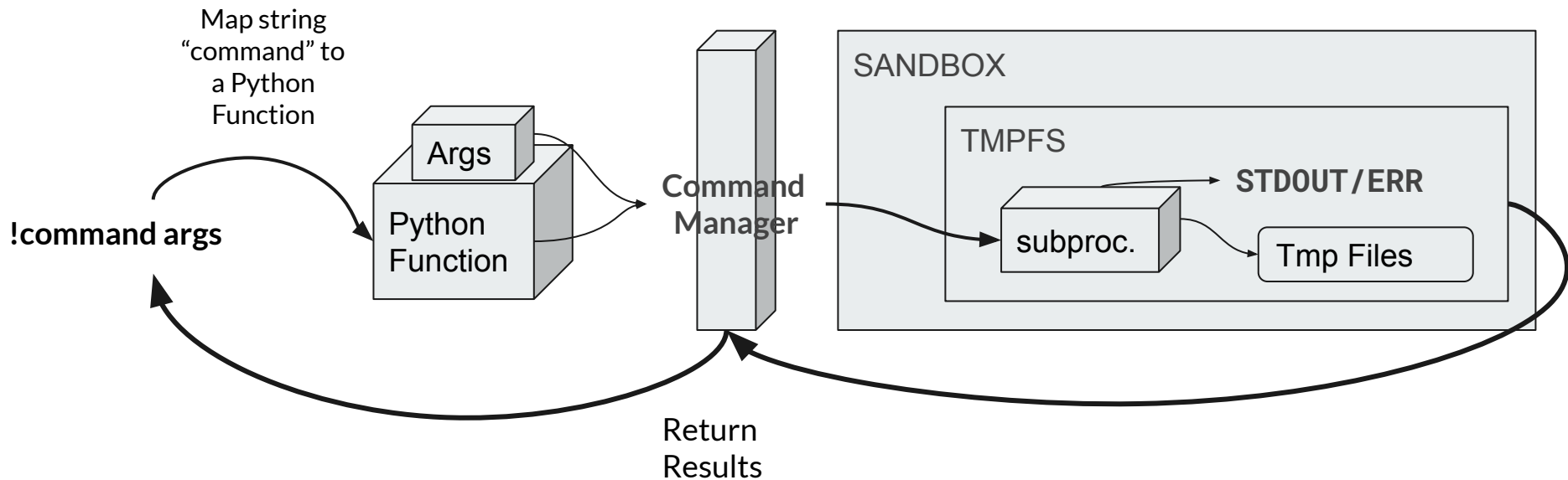


!exec

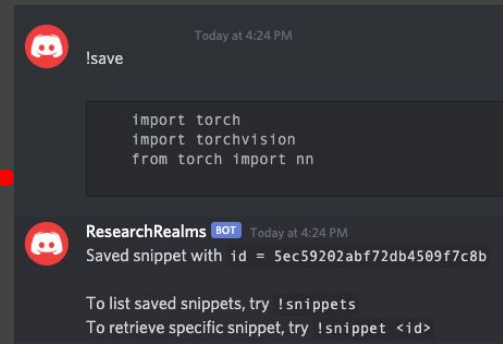
```
```python
```

```
import matplotlib.pyplot as plt
plt.figure()
plt.plot([1, 2])
plt.title("test")
```

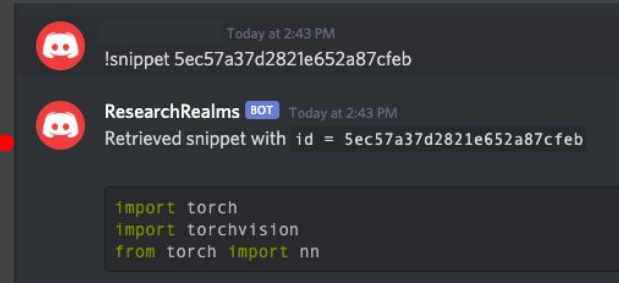
# Research Realms Backbone: The Executor



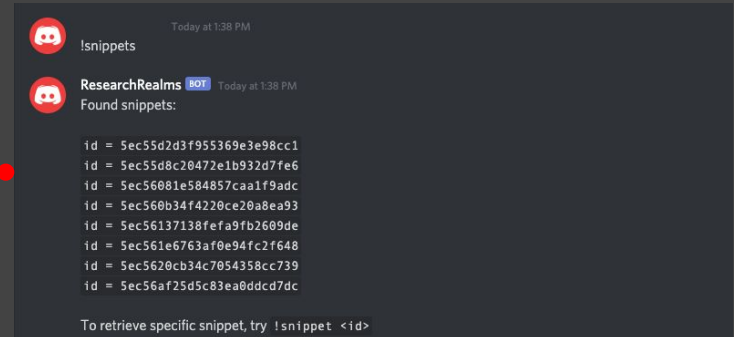
Supports saving any snippets in the DB and assigns a unique **id**



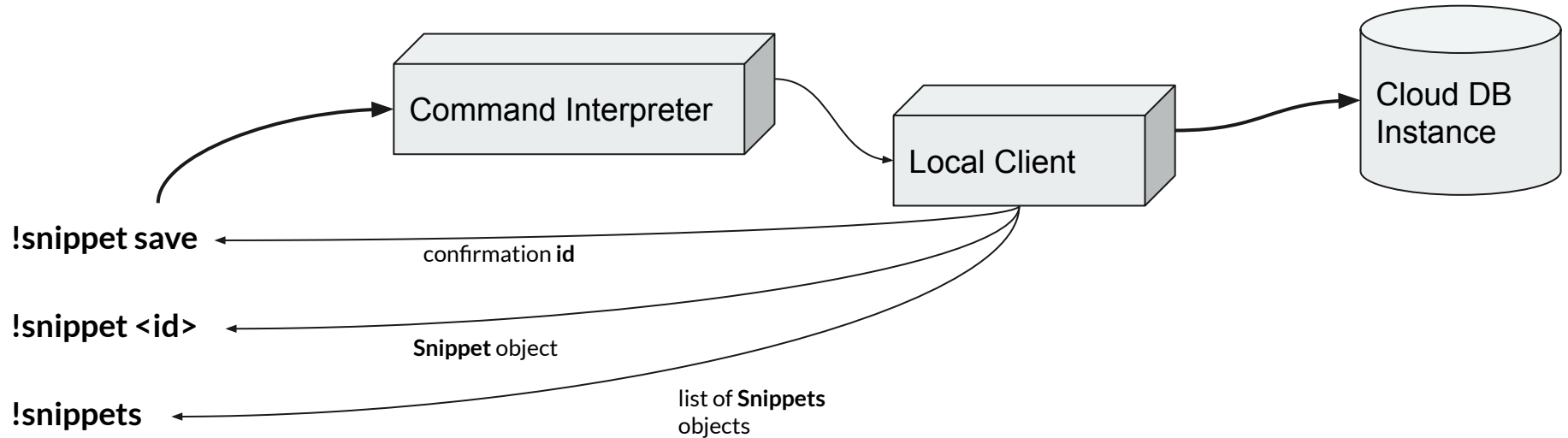
Retrieving any snippet saved by the current user from the DB based on **id**



Retrieving list of snippets saved by the current user



# Snippet Management and DB





# Demo!

Come join us right now at:  
<https://discord.gg/c6Q8pJ>

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