

Particle Pals: Technology Review

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Background

Project Goals:

- Create GUI that will allow users to track particles/objects
- Proper storage and organization for data

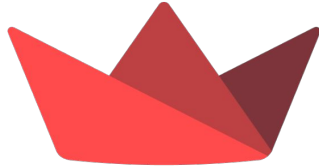
Why a GUI?

- We want to create an easy-to-use interface
 - Users can be inexperienced/new to particle tracking
- Should be versatile
 - If users have experience, they should be able to use it



Technologies Considered

Streamlit



Plotly Dash



PyTK



PyQt5



Why Streamlit

- Easy to use
- Open access
- Works well with Pandas, Matplotlib
- Widgets for different data types.

Pick a number



0 100

```
number = st.slider("Pick a number", 0, 100)
```



Pick a file

Drag and drop files here
Limit 200MB per file • TXT

Browse files

```
file = st.file_uploader("Pick a file")
```

Pick a color



```
color = st.color_picker("Pick a color")
```

Pick a pet

☒ Dog

☐ Cat

☐ Bird

```
pet = st.radio("Pick a pet", ["Dog", "Cat", "Bird"])
```

Pick a date

< November 2023 >

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Appeal of Streamlit

- Nels is an expert (#respectthehoodie)
- Streamlit is designed with simplicity in mind. Even those with limited experience in web development can create interactive, data-driven web apps.
 - Streamlit doesn't require in-depth knowledge of front-end technologies like HTML, CSS, or JavaScript. (None of us are good in CSS)
- Streamlit includes widgets like sliders, buttons, and text input, which make it straightforward to build interactive features into apps.

Drawbacks of Streamlit

- Not very customizable for projects that have a lot of components.
 - its simplicity might become a limitation when you need more fine-grained control over the web app's structure or want to implement complex frontend features.
- Only works on the web
 - slow for large data sets and scaling large and complex applications.
- Streamlit is Python-centric, which is great for Python users but excludes those who prefer or require other programming languages.
 - Some components might need to be written in another language for efficiency.