The Adventures of a ROOT Novice

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About Me

Final year Computer Science undergraduate at the *University of Delhi*

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Working on *Hist* and *uproot-browser*

HSF Training Working Group Member

Python is my language of choice

Background

- ❏ Beginner level previous experience with `.root` files

- ❏ Some experience with `uproot`

- ❏ Have been playing around with `TTrees` and `TFiles` via `uproot-browser`

- ❏ First contact with ROOT at the Software Carpentry Workshop

Note: All the views presented in this talk are personal!

First Impressions

❏ Before the workshop, thought that ROOT is difficult to learn and use

❏ Surprisingly low entry barrier!

❏ PyROOT is beginner-friendly for Python users

❏ Detailed documentation, references and user-friendly guides are extremely helpful

❏ Expectedly powerful yet surprising features! (more on that later)

Accessibility and Familiarity

❏ **PyROOT** is accessible and helped my understanding of ROOT

    ❏ Easy to pick up from Jupyter

```
[1]: import ROOT

     Welcome to JupyROOT 6.26/00
```

    ❏ Familiar interfaces and object definitions remove the need to learn new syntax

```
[2]: h = ROOT.TH1F("my_histo", "Example histogram", 100, -4, 4)
```

Performance and C++ Integration

❏ **PyROOT** has easy syntax and high performance

    ❏ As said in the workshop, "*Python façade, C++ performance*"

❏ **C++ bindings** and ability to call **user-defined C++ code** was surprising!

    ❏ Automatic bindings and pythonizations together provide a good experience
    ❏ The type conversions are intuitive
    ❏ `%%cpp` magic with C++ syntax highlighting proved to be helpful

Interactivity and Plots

❏ **Interactive graphics** make the experience more immersive

    ❏ `%jsroot` magic makes the plot interaction quick

❏ **Plot definitions** provide familiar syntax

```
[4]: c = ROOT.TCanvas()
     h.Draw()
     c.Draw() # don't forget to draw the canvas too!
```

Miscellaneous Insights

❏ **Plots** are easy to modify and play with

❏ `TBrowser` is a nice way to explore `.root` files, it is the inspiration behind `uproot-browser`! :)

❏ **RDataFrame** is extremely powerful, I have just explored its surface

❏ **Documentation details** such as the diagrams and the flow charts provide a good visual understanding

❏ ROOT is not as intimidating as I thought it would be :)

Acknowledgements

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❑ I am thankful to all the developers of ROOT and the wonderful community!

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❑ And last, but not the least, I am thankful to everyone for joining!

Thank you!

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