About Us

A final year undergraduate project in Software Engineering.

Website : [https://sciflow-fyp.github.io/](https://sciflow-fyp.github.io/)

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About SciFlow

- Scientific workflow require complex interactions between individual computational modules, based on dynamic decision making. Therefore, a mechanism for proper coordination among the modules is necessary.

- Separation of computational components from workflow coordination provides programming flexibility and expressivity to the user, enabling easier workflow application generation.

- Parsl enables SciFlow to provide a layer of abstraction for cluster computing. This will benefit the Scientific Computing community by allowing domain experts to orchestrate complex workflows on a variety of HPC resources, with minimal effort.

- Solution:
SciFlow Connectors

1. Sequence
2. Parallel Split
3. Synchronization
4. Exclusive Choice
5. Simple Merge
6. Multiple Merge
7. Loop

Scientific workflow coordination using golang channels

Computational Module 01 → Computational Module 02

Computational Module 03

Computational Module 04 → Computational Module 05

Dynamic decision making with golang

Execution location independence with Parsl
Scientists often do not possess low level programming knowledge, and higher level abstractions like Parsl enables them to harness the full potential of HPC resources with minimum effort.

Large datasets in Scientific Computing applications can be easily data parallelized, row-wise or column-wise, using Parsl.

SciFlow used Parsl to provide execution-location independence and ease in scaling.
Thoughts and Suggestions

- The predecessor to Parsl, the Swift website does not provide any connection to Parsl itself. Even though Parsl was a better fit for our project, getting to know of its existence took us more time than necessary. It could have been almost too late!

- Parsl could easily be integrated to any project, irrespective of its complexity or duration (SciFlow was an undergraduate project with a duration of one year).

- Highly responsive development team (special thanks to Mr. Ben Clifford).
Q & A

Feel free to email us at sciflowframework@gmail.com for further questions.