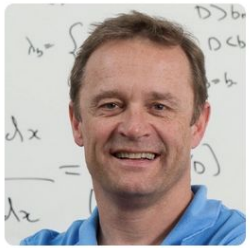
# **E**arth **S**cience **PR**oblems for the **E**valuation of **S**trategies, **S**olvers and **O**ptimizers

Espresso



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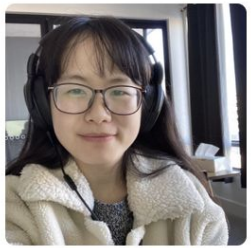

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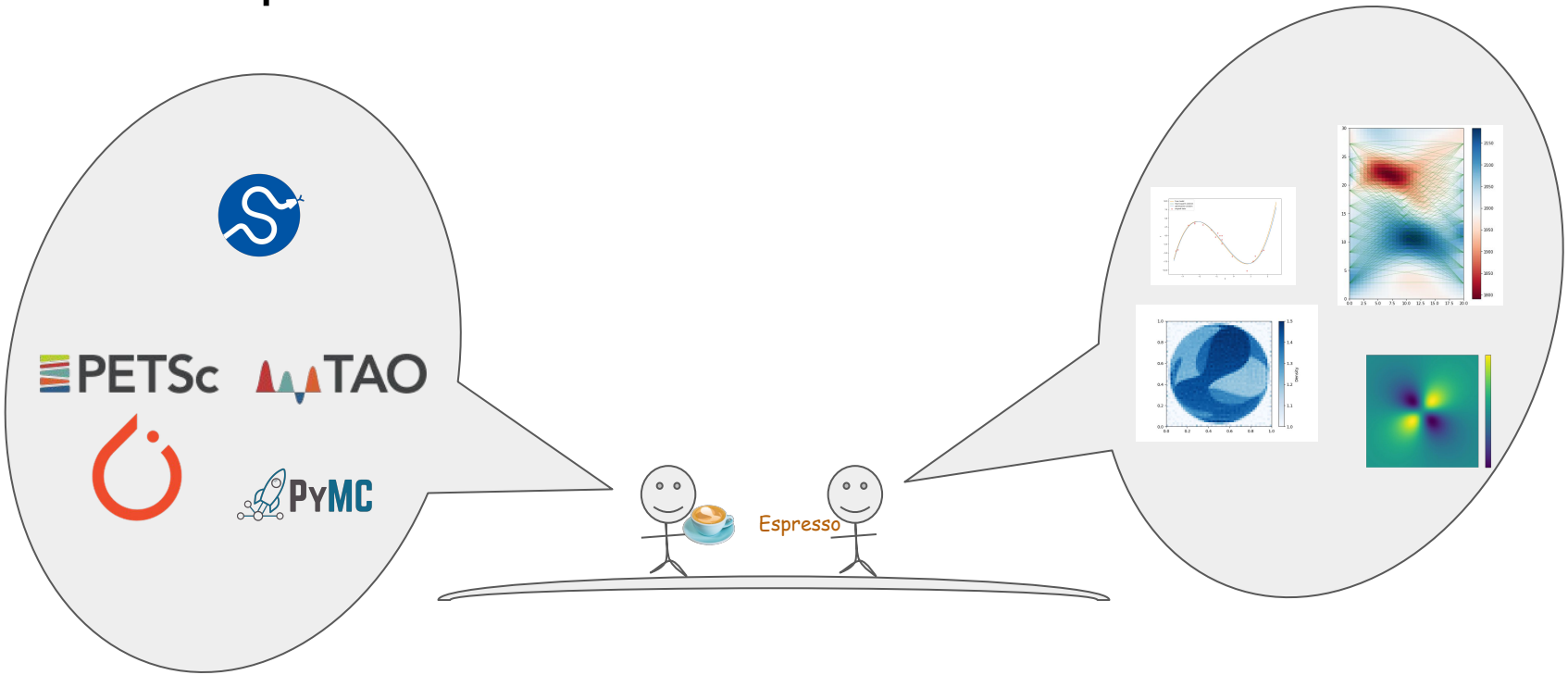
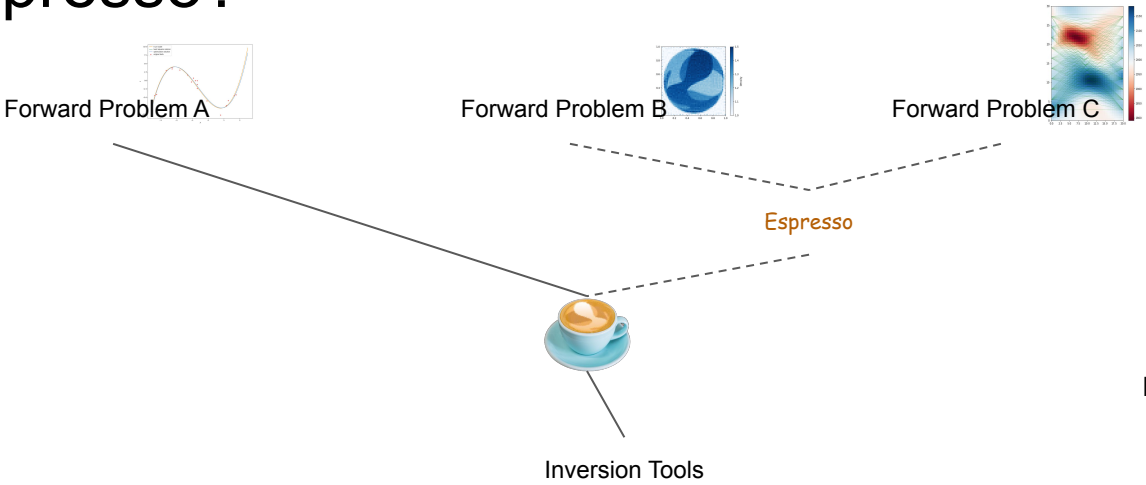
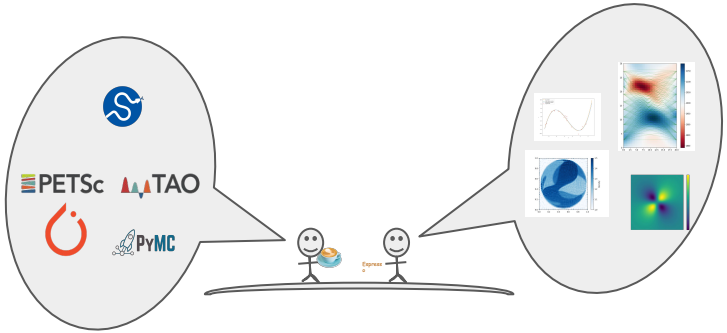
# What is Espresso?



# What is Espresso?




| | Users | Contributors |
|---|---|---|
| CoFI | Domain experts | Inference experts |
| Espresso | Inference people | Domain experts |

InLab

Earth Science PRoblems for the Evaluation of Strategies, Solvers and Optimizers

# Who is Espresso for?

| If you'd like to… | Then… |
|---|---|
| *Distribute* your forward simulation code and make it available to the public | *Add* your example in Espresso |
| *Use* CoFI but don't know where to get started | *Add* your example in Espresso, then start from one of our CoFI example template |
| *Use* CoFI on your problem and know where to start | *Use* CoFI |
| *Develop, evaluate or benchmark* your inference algorithm | *Use* Espresso |
| *Distribute* your inference algorithm and make it available to the public | *Add* your inference algorithm code in CoFI |

# How to use Espresso?

```
from cofi_espresso import XrayTomography

my_example = XrayTomography()

# minimum viable interface
model_good = my_example.good_model
model_ref = my_example.starting_model
data_obs = my_example.data
data_synth = my_example.forward(my_model)

# optional interface
jac = my_example.jacobian(my_model)
log_likelihood = my_example.log_likelihood(my_model)
figure_model = my_example.plot_model(my_model)
figure_data = my_example.plot_data(my_data)
print(my_example.description)
```

# How to use Espresso?

```
from cofi_espresso import GravityDensity

my_example = GravityDensity()

# minimum viable interface
model_good = my_example.good_model
model_ref = my_example.starting_model
data_obs = my_example.data
data_synth = my_example.forward(my_model)

# optional interface
jac = my_example.jacobian(my_model)
log_likelihood = my_example.log_likelihood(my_model)
figure_model = my_example.plot_model(my_model)
figure_data = my_example.plot_data(my_data)
print(my_example.description)
```

https://github.com/inlab-geo/espresso

# How to contribute to Espresso?

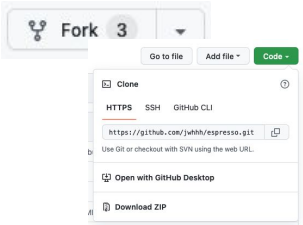
You need: GitHub account + Python

1 — 2 — 3

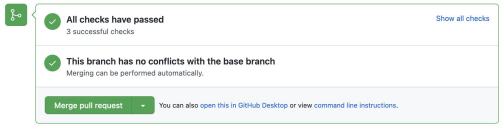
Download

Add in your example

Upload







# How to join the community?

- Email us: *info@inlab.edu.au*
- Join Slack: *inlab-community.slack.com*
- Talk to us directly

- Students can write a short proposal to put a problem in Espresso (get paid!)
- Browse through GitHub & documentation (*https://inlab.edu.au/community/*) and let us know your feedback