Jug: Reproducible Research in Python

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A Processing Pipeline in Python

```
def preprocess(f):
    return ...


def compute(fs, param):
    return ...


def write_output(results):
    ...

intermediate = []
for i in glob('*.txt'):
    intermediate.append(processing(i))
results = []
for pvalue in [0.5, 1.0, 2.0, 4.0]
    results.append(compute(intermediate, pvalue))
write_output(results)
```

A Processing Pipeline in JUG

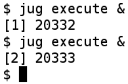
```
@TaskGenerator
def preprocess(f):
    return ...

@TaskGenerator
def compute(fs, param):
    return ...

@TaskGenerator
def write_output(results):
    ...

intermediate = []
for i in glob(’*.txt’):
    intermediate.append(processing(i))
results = []
for pvalue in [0.5, 1.0, 2.0, 4.0]
    results.append(compute(intermediate, pvalue))
write_output(results)
```

Running jug...



```
$ jug execute &
[1] 20332
$ jug execute &
[2] 20333
$ █
```

Jug Enhances Reproducibility

Dark Side of Computational Analysis

- "What was the parameter that generated this result? I think it was ½, right? Had to be."
- "Deleted the intermediate results, reran; now everything is different."
- "We cannot reproduce the table in our own paper."

Advantages of Jug

- With jug, changing parameters will trigger recomputation of all downstream results.
- jug invalidate handles all dependencies
- Unlike make, you can use any Python function

Finding Out More About Jug...

- Talk to me in person
- luis@luispedro.org
- http://github.com/luispedro/jug
  the code
- http://jug.rtfd.org
  read the fine documentation