Introduction to IPCluster

Sponsored by AWS

Continuum Analytics

Unofficial Python Slogan

“ CPU time is cheap, ***my*** *time is expensive ”*

Some Truthy Statements

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- But scientific workflows can get big
  - My expensive time spent waiting instead of doing science
  - Let's replace that with more cheap CPU time

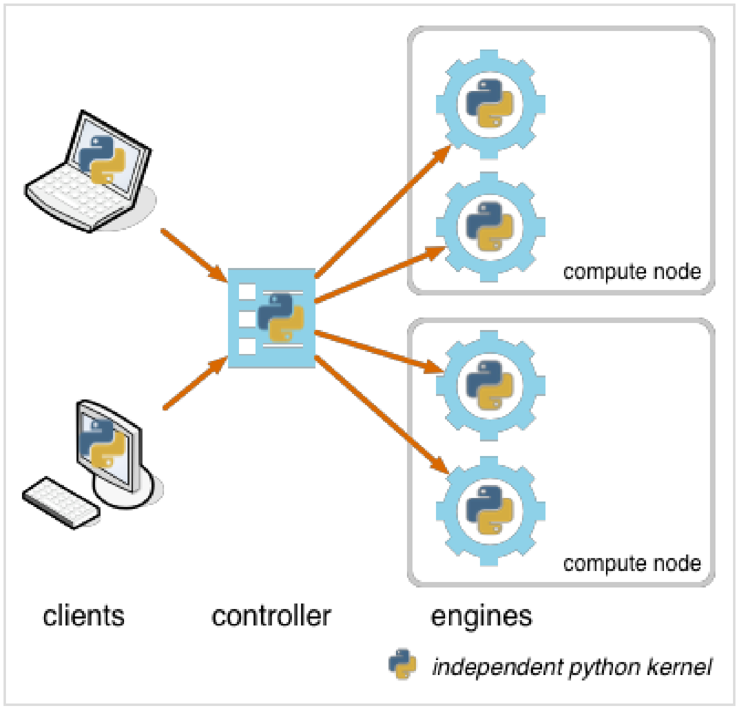
Some Truthy Statements

- We have horsepower on-demand (AWS, Azure, Heroku, University Clusters)

Some Truthy Statements

- We need a nice way to wrangle the data/code between nodes

IPCluster Overview



The Basic Use Case

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- An embarassingly (pleasingly) parallel workflow
    - Little/no communication between jobs
    - Parameter scans, multiple BLAST queries, genetic algorithms, etc.
- Can utilize the CPU/GPU/RAM of many nodes simultaneously
- Moves relatively small amounts of data
    - Aggregates/subsets are good enough
    - The data is already on the nodes

Parallel-o World

Create a client object

```
from IPython.parallel import Client

client = Client()
```

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Construct a view

```
balanced = client.load_balanced_view()
# or
direct   = client[:]
```

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Define a function

```
def hello():
    return "Hello World!"
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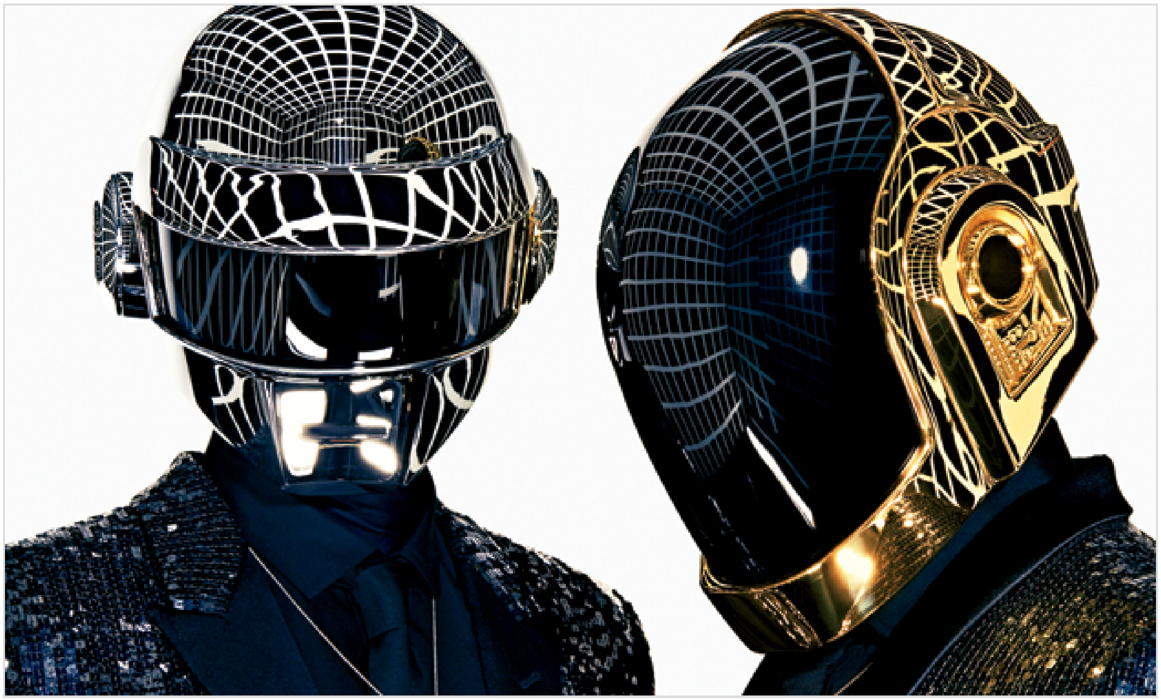
Run it remotely

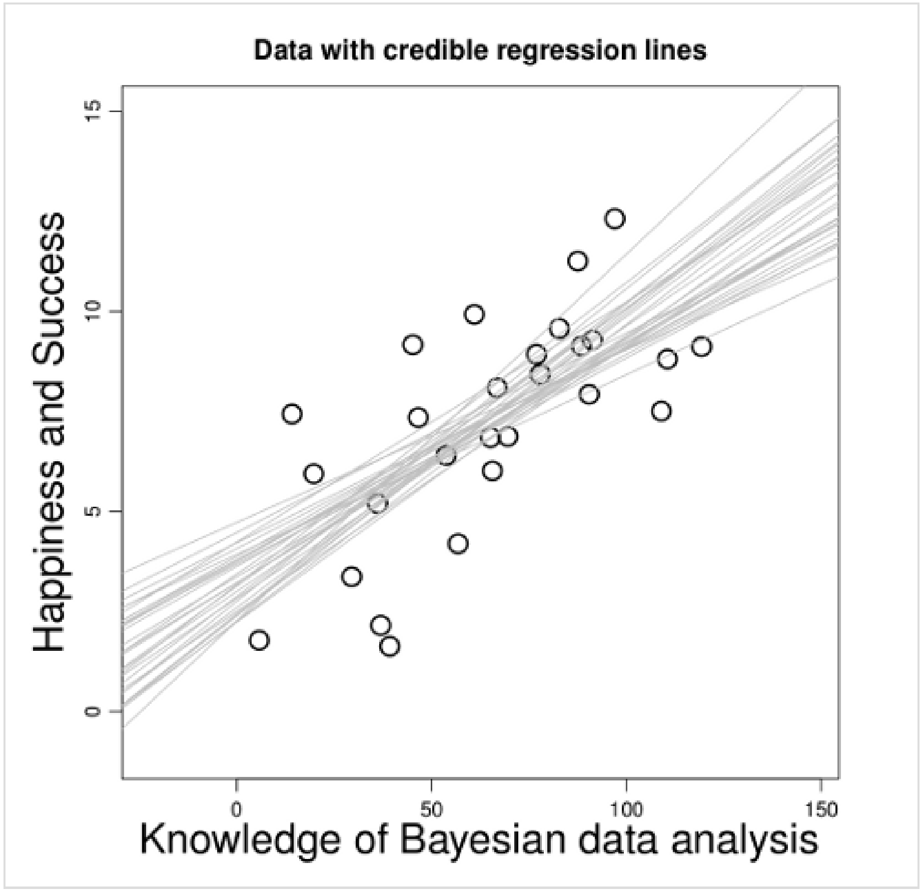
```
resp = direct.apply(hello)
resp.get()
```

```
Out[33]: ['Hello World!', 'Hello World!', 'Hello World!']
```

Easy Demo



Use Case: Bayesian Estimation



Images: John K Kruschke

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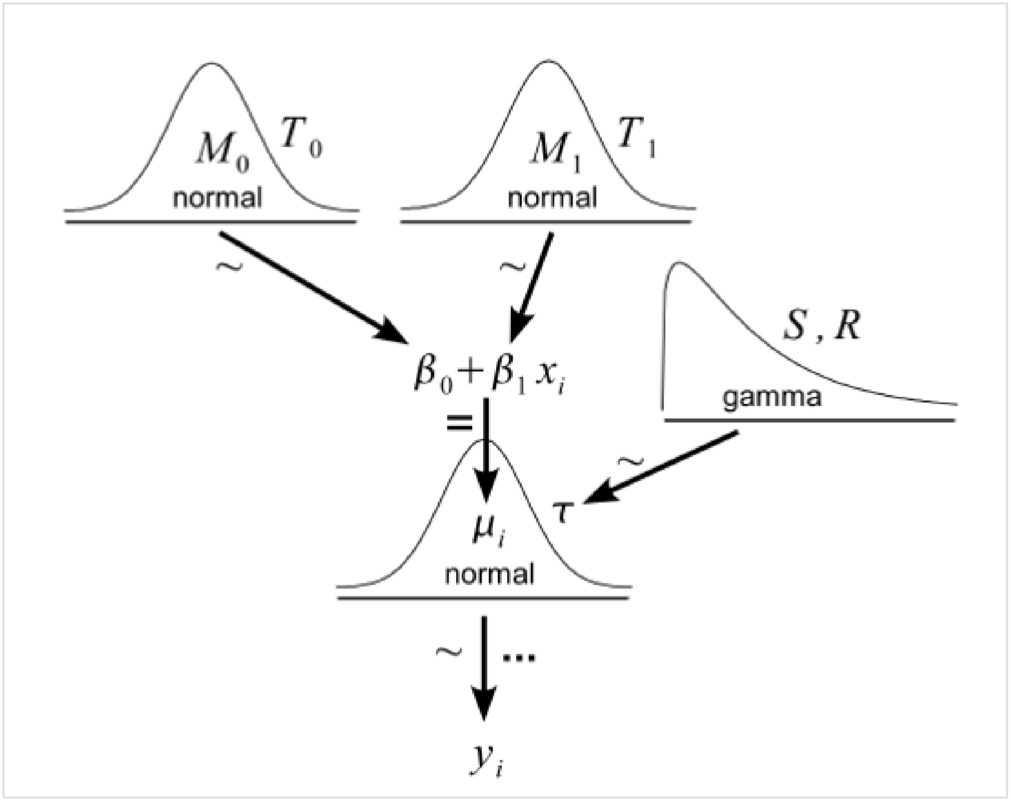
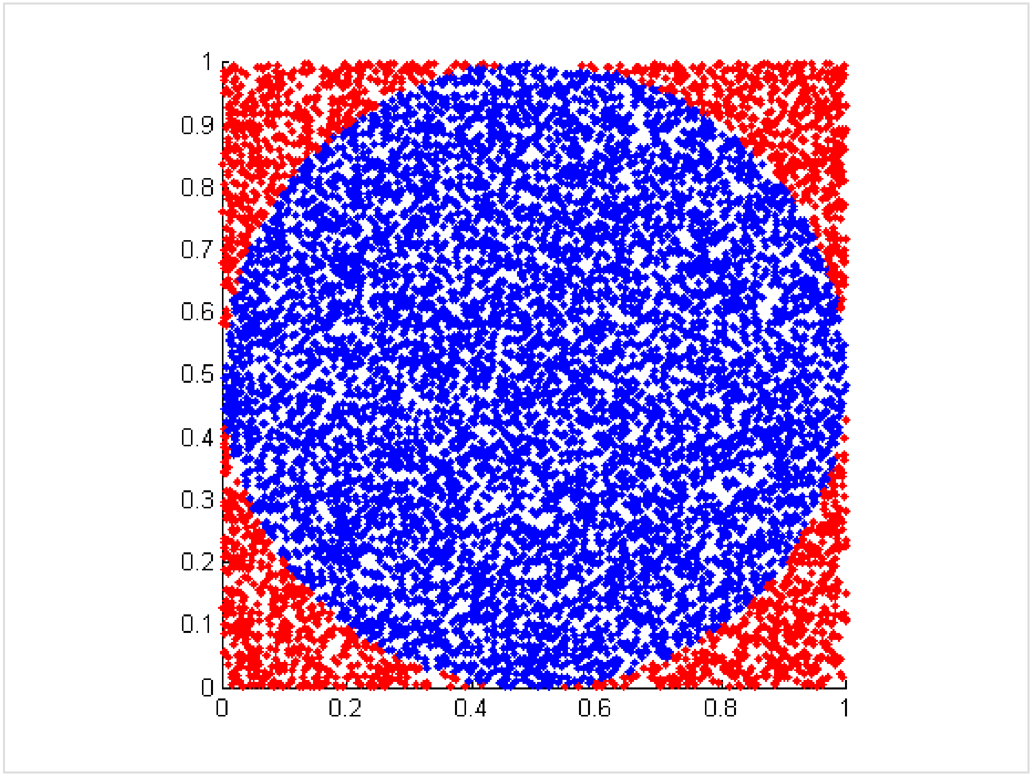


Use Case: Bayesian Estimation



Bayesian Demo