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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- We prefer an expressive language over raw speed
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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)

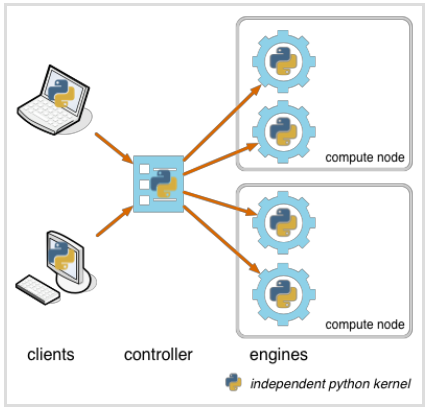
CONTINUUM ANALYTICS

Some Truthy Statements

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

CONTINUUM
ANALYTICS

IPCluster Overview



CONTINUUM
ANALYTICS

The Basic Use Case

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  - Little/no communication between jobs
  - Parameter scans, multiple BLAST queries, genetic algorithms, etc.

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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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def hello():
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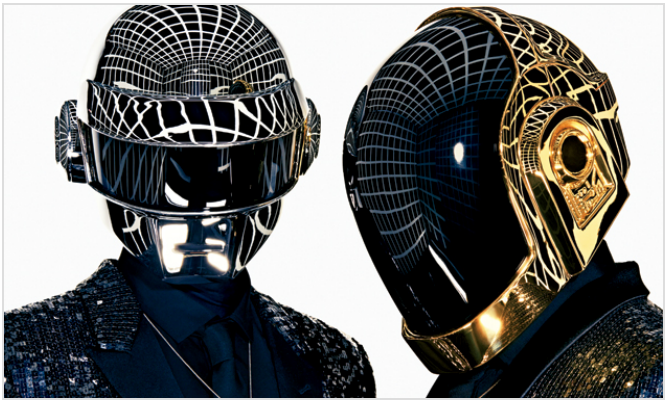
Run it remotely

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

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

Easy Demo



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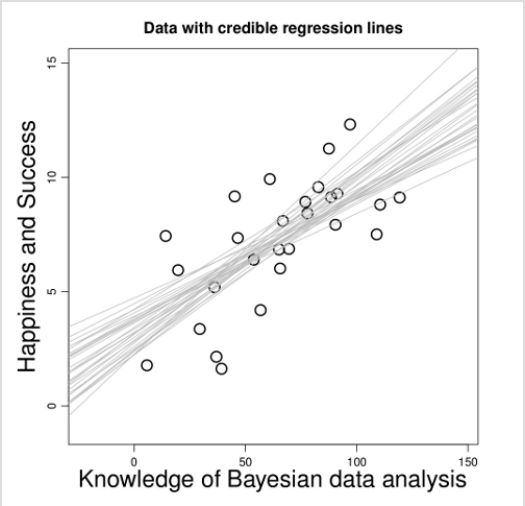
Use Case: Bayesian Estimation



Images: John K Kruschke

CONTINUUM ANALYTICS

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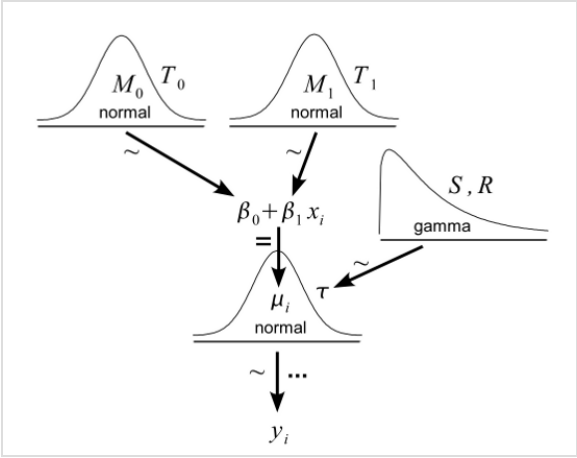

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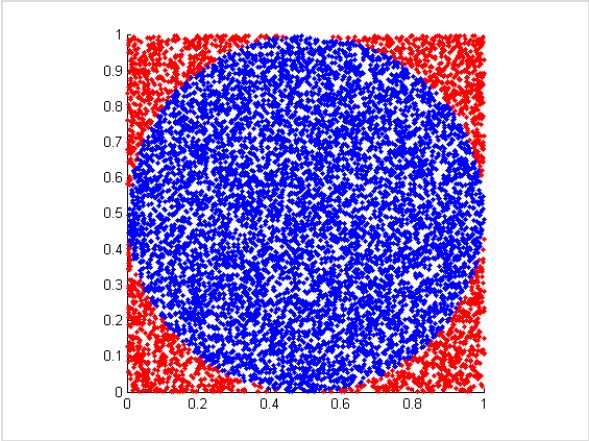

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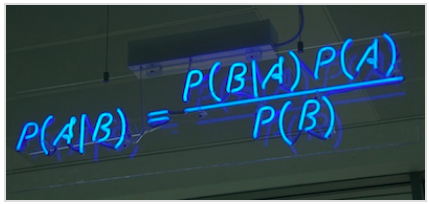
Bayesian Demo



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