Demonstration Beamer/Reveal

Igor M. Coelho

April 23, 2020

1 Part 2: Plots

2 Columns Example

3 Line Example

4 More Columns Example

5 Finish

Section 1

Part 2: Plots

Creating Interactive Plots I

One powerful approach on iLectures on Pandoc is to create plots and graphs that are interactive. If we also want to be able to have a PDF-based version, the best library available seems to be plotly.

We focus on two implementations of plotly:

- A Python version: https://plotly.com/python/
- A JS version: https://plotly.com/javascript/

We will need a pandoc filter for plots: https://github.com/LaurentRDC/pandoc-plot.

We also provide a filter to switch between both versions: comments-to.py.

Install Pandoc Plots I

To install filter `pandoc-plot`, you will need Anaconda3 for many data science dependencies.

For Windows and Mac, you can find the plugin on conda-forge. For Linux, it's not available unfortunately. But you can directly download from github (or from this project) and put on your project folder.

Install plotly deps: `conda install -c plotly plotly-orca`

Remember to do `conda activate`, otherwise you may still get errors like: `ModuleNotFoundError: No module named 'plotly'`.

Options on Pandoc Plots I

This amazing plugin allows several graphs (only `plotly` with interactive counterpart!):

- `plotly_python` : plots using the plotly Python library
- `plotly_r` : plots using the plotly R library
- `matplotlib`: plots using the matplotlib Python library
- `matlabplot`: plots using MATLAB
- `mathplot` : plots using Mathematica
- `octaveplot`: plots using GNU Octave
- `ggplot2`: plots using ggplot2
- `gnuplot`: plots using gnuplot
- and more...

You can get this information via `pandoc-plot --toolkits`.

Practical Examples I

We consider Atom editor with `markdown-preview-enhanced`, which allows inline script execution ("Code Chunks"). Too bad that its syntax is not equivalent to `pandoc-plot`, so we will need to `comment` the visual part (during development) for it to "disappear" on generated `beamer`/`revealjs`.

For the Atom plugin: "`` `python {cmd=true}` `` and specially "`` `python {cmd=true hide=true output="markdown"}` ``

For the `pandoc-plot` and `beamer`: "`` `{.plotly_python caption="Figure caption"}` ``

For the JS and `revealjs`: an html `<script> ... </script>`.

Comment Switches I

We recommend three switches:

- `<!-- BEGIN COMMENT -->`: for only visual markdown plugin features
- `<!-- BEGIN COMMENT TO html -->`: for only `beamer` stuff
- `<!-- BEGIN COMMENT TO beamer -->`: for only `revealjs` stuff

On Atom and `markdown-preview-enhanced`, use `shift+<enter>` or `ctrl+shift+<enter>` to execute Code Chunks.

Section 2

Columns Example

Columns Part 1/3 (a) I

Only visible in Atom. See: ./figs/fig_plotly_canada.py.

```
<!-- BEGIN COMMENT -->
\```python {cmd=true output="markdown"}
from figs.fig_plotly_canada import draw_fig
fig = draw_fig('figs/fig_plotly_canada.png')
\```
<!-- @import "figs/fig_plotly_canada.png" -->
```

Columns Part 1/3 (b) I

Columns Part 1/3 (b) II

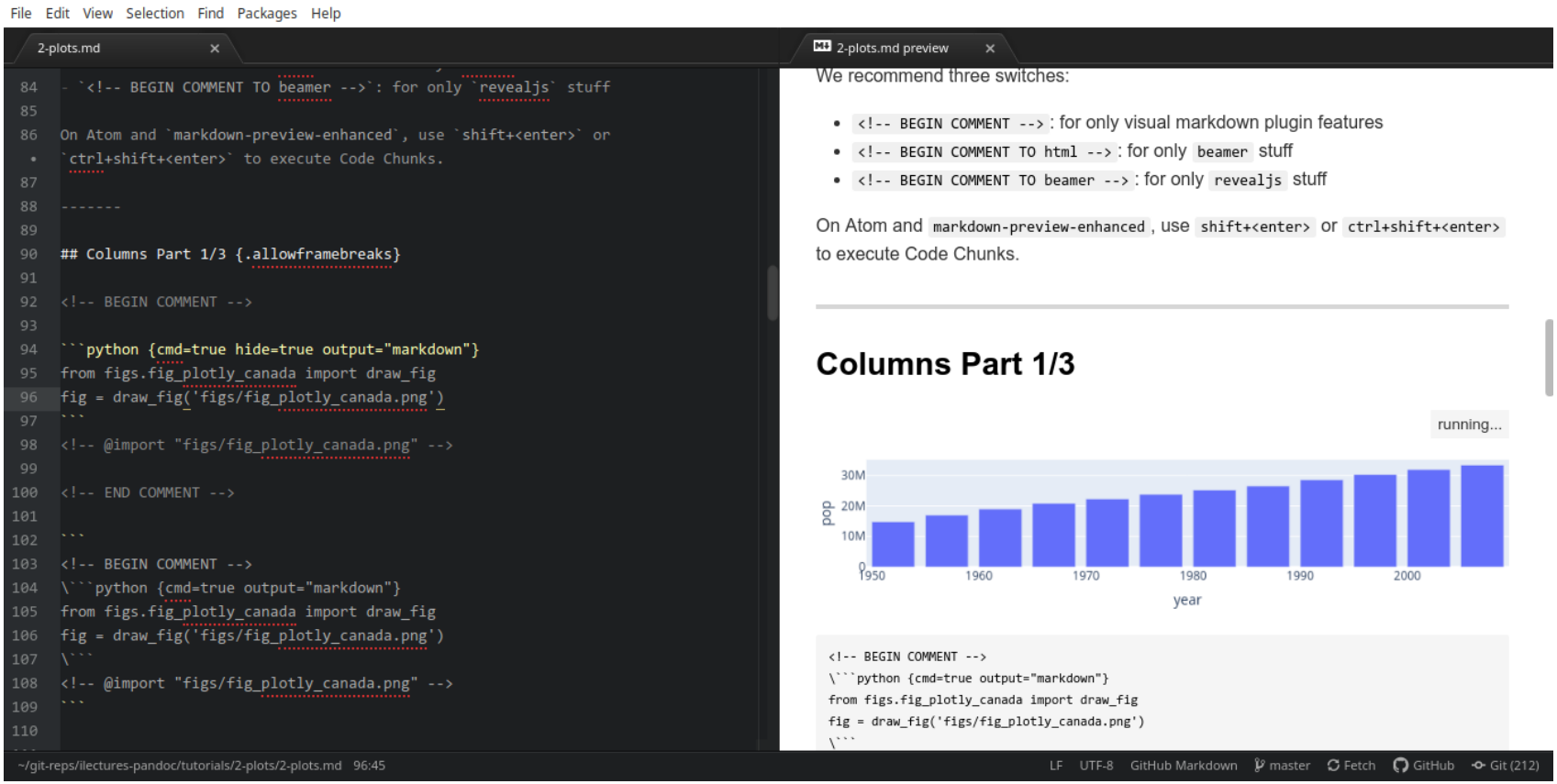


Figure 1: Code Chunk executing on Atom

Columns Part 2/3 I

Figure 2: This is a Plotly figure

Columns Part 2/3 II

```
<!-- BEGIN COMMENT TO html -->
\`\`\`{.plotly_python caption="This is a Plotly figure"}
from figs.fig_plotly_canada import draw_fig
fig = draw_fig('figs/fig_plotly_canada.png')
\`\`\`
<!-- END COMMENT TO html -->
```

Columns Part 3/3 I

```
<!-- BEGIN COMMENT TO beamer -->
<div id='tester2'></div> <script type="module">
import {draw_fig} from './figs/fig_plotly_canada.js';
draw_fig( document.getElementById('tester2') );
</script>
<!-- END COMMENT TO beamer -->
```

Section 3

Line Example

Line Part 1/3 (a) I

Only visible in Atom. See: ./figs/fig_plotly_line1.py.

```
<!-- BEGIN COMMENT -->
\```python {cmd=true hide=true output="markdown"}
from figs.fig_plotly_line1 import draw_fig
fig = draw_fig('figs/fig_plotly_line1.png')
\```
<!-- @import "figs/fig_plotly_line1.png" -->
<!-- END COMMENT -->
```

Line Part 2/3 (a) I

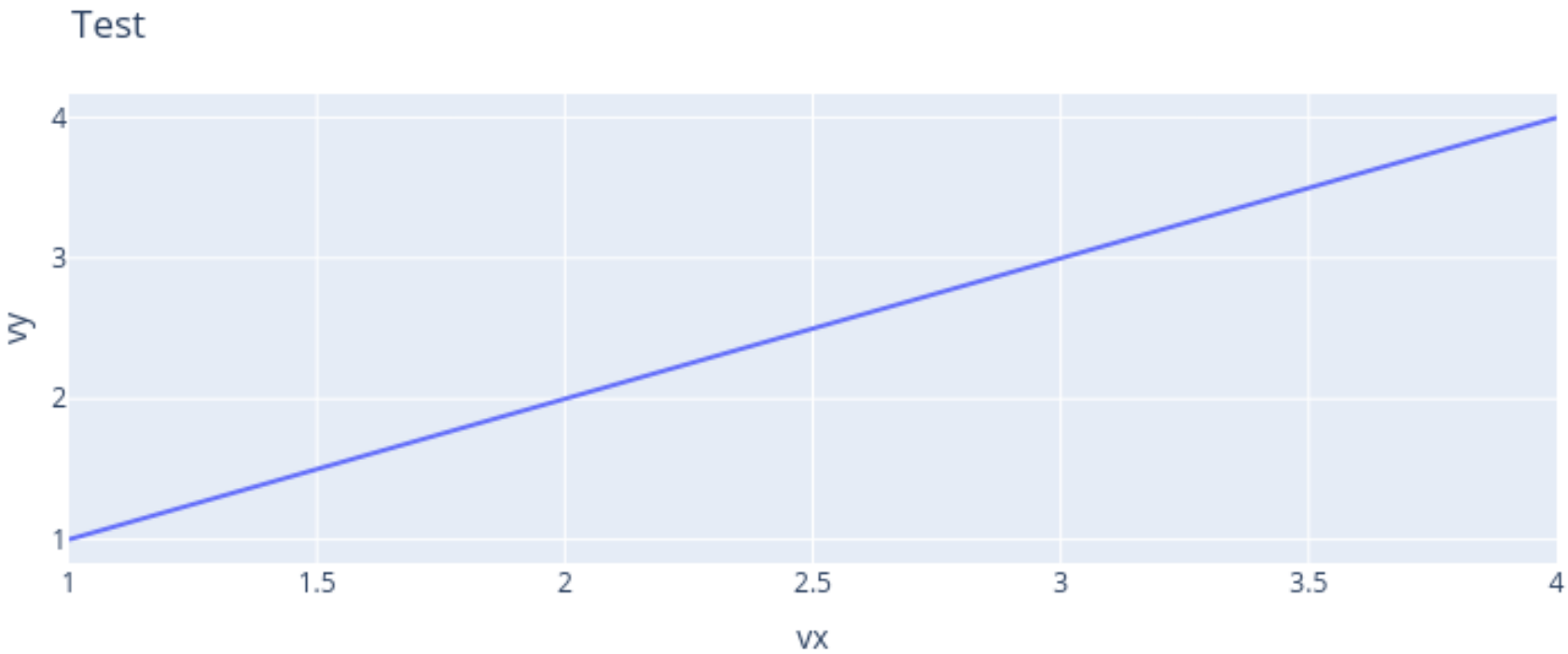


Figure 3: This is a Plotly figure

Line Part 2/3 (a) II

````
\```{.plotly_python caption="This is a Plotly figure"}
from figs.fig_plotly_line1 import draw_fig
fig = draw_fig('figs/fig_plotly_line1.png')
\```
````

Line Part 2/3 (b) I

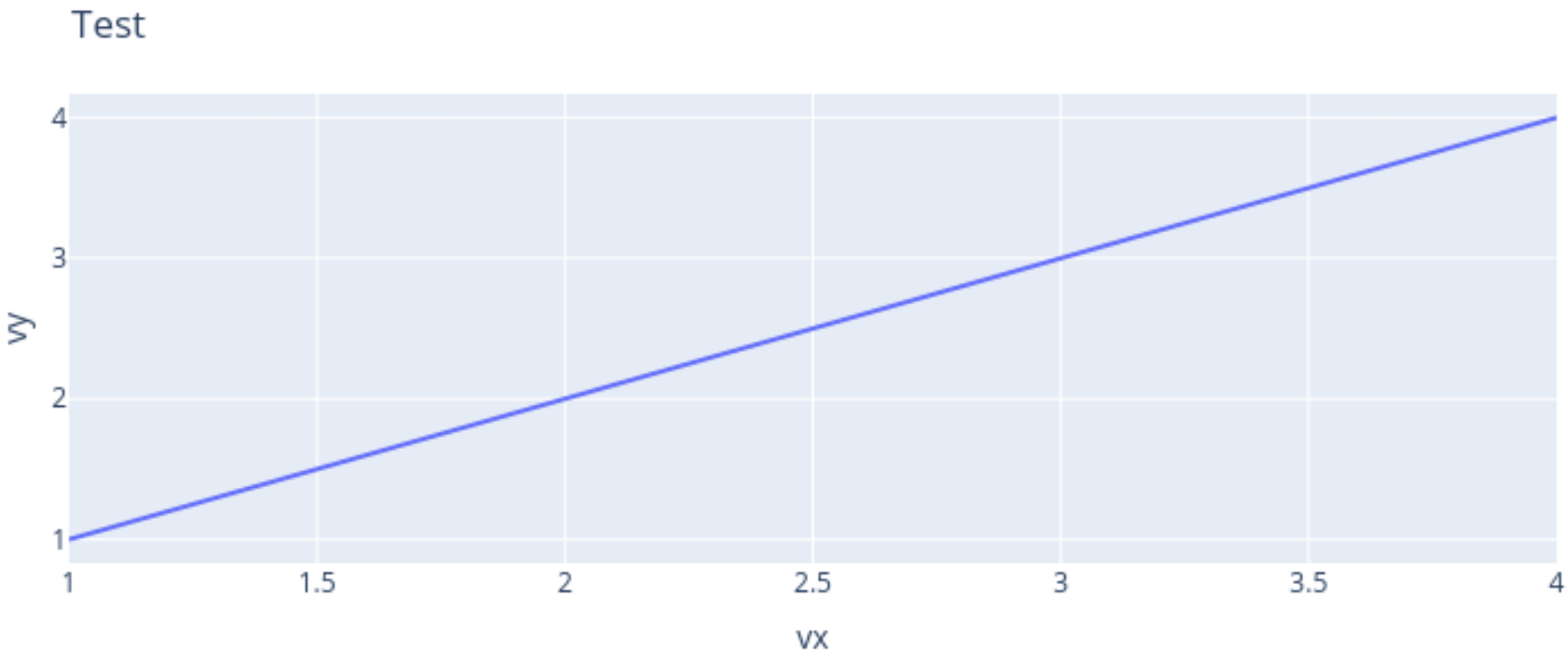


Figure 4: This is a Plotly figure

Line Part 2/3 (b) II

This will not appear on revealjs, only beamer.

````
<!-- BEGIN COMMENT TO revealjs -->
\```{.plotly_python caption="This is a Plotly figure"}
from figs.fig_plotly_line1 import draw_fig
fig = draw_fig('figs/fig_plotly_line1.png')
\```
<!-- END COMMENT TO revealjs -->
````

See: ./figs/fig_plotly_line1.png.

Line Part 3/3 I

See: ./figs/fig_plotly_line1.js.

```
<!-- BEGIN COMMENT TO beamer -->
<div id='tester3'></div> <script type="module">
import {draw_fig} from './figs/fig_plotly_line1.js';
draw_fig( document.getElementById('tester3') );
</script>
<!-- END COMMENT TO beamer -->
```

Section 4

More Columns Example

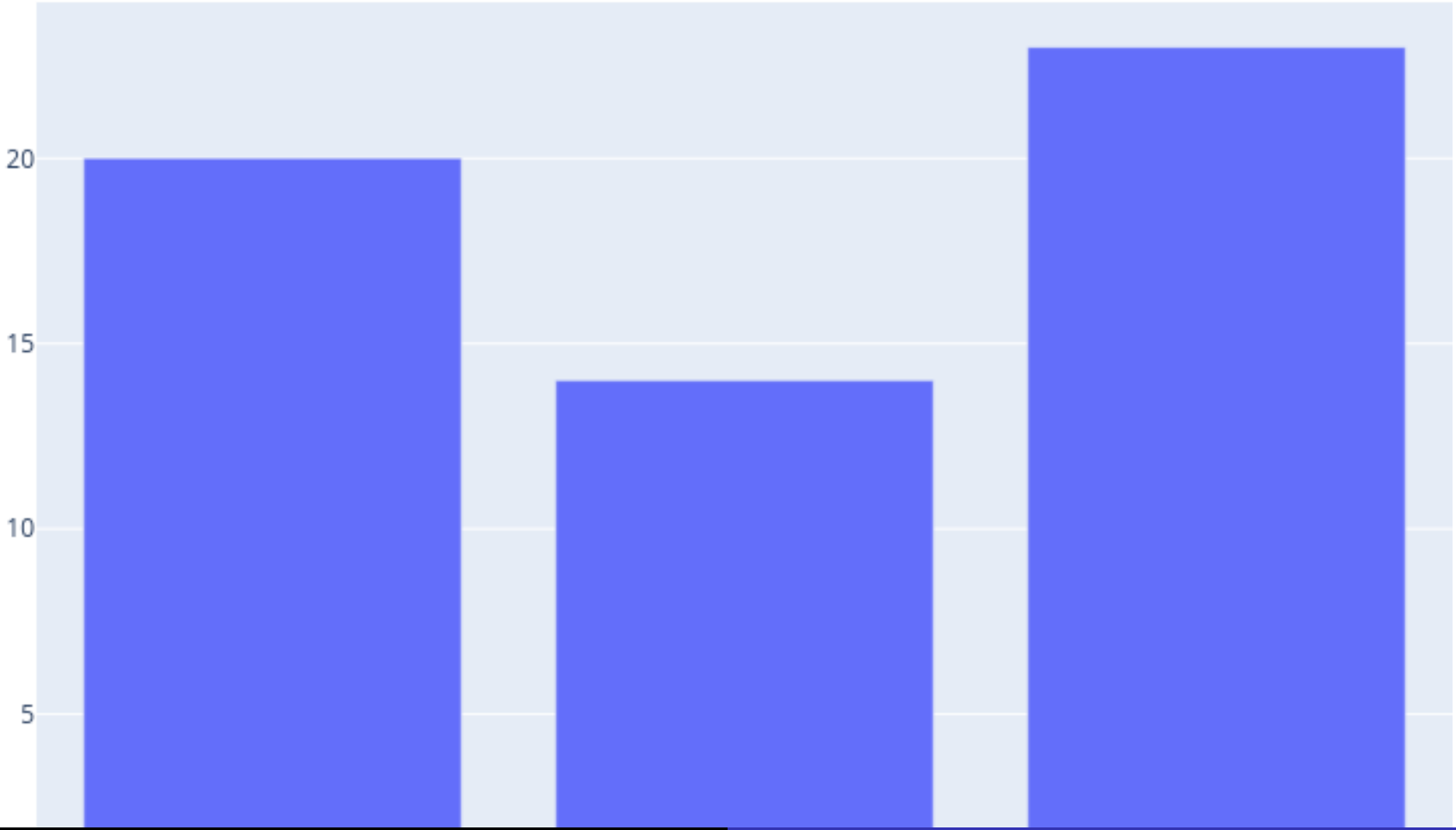
More Columns Part 1/3 I

Figure only appears on Atom, after pressing shift+<enter>. See: ./figs/fig_plotly_bar1.py.

```
<!-- BEGIN COMMENT -->
\```python {cmd=true hide=true output="markdown"}
from figs.fig_plotly_bar1 import draw_fig
fig = draw_fig('figs/fig_plotly_bar1.png')
\```
<!-- @import "figs/fig_plotly_bar1.png" -->
<!-- END COMMENT -->
```

More Columns Part 2/3 (a) I

More Columns Part 2/3 (a) II



More Columns Part 2/3 (b) I

See file `figs/fig_plotly_bar1.py`.

```
import plotly.express as px
import plotly as plotly
import plotly.graph_objects as go

def draw_fig(filename):
    animals=['giraffes', 'orangutans', 'monkeys']
    fig = go.Figure([go.Bar(x=animals, y=[20, 14, 23])])
    fig.update_layout( margin=dict(l=0, r=0, t=50, b=0) )
    fig.write_image(filename)
    return fig
```

More Columns Part 3/3 (a) I

This will not appear on beamer, only on revealjs. See: ./figs/fig_plotly_bar1.js.

More Columns Part 3/3 (b) I

```
<!-- BEGIN COMMENT TO beamer -->
<div id='tester4'></div>
<script type="module">
import {draw_fig} from './figs/fig_plotly_bar1.js';
draw_fig( document.getElementById('tester4') );
</script>
<!-- END COMMENT TO beamer -->
```

More Columns Part 3/3 (c) I

See ./figs/fig_plotly_bar1.js.

```
export function draw_fig(field) {
  Plotly.newPlot(field, [{
      x: ['giraffes', 'orangutans', 'monkeys'],
      y: [20, 14, 23],
      type: 'bar'
    }]);
}
```

Section 5

Finish

Try more formats

Feel free to try other plot formats and technologies.

Learning more

Please contribute with us if you find more nice things!