sparsity_jac

September 30, 2024

1 sparsity_jac

```
[1]: from casadi import *
     from numpy import *
     import casadi as c
     from pylab import spy, show
```

We construct a simple SX expression

```
[2]: x = SX.sym("x",40)
     y = x[:-2]-2*x[1:-1]+x[2:]
```

Let's see what the first 5 entries of y look like

```
[3]: print(y[:5])
```

```
@1=2, [((x_0-(@1*x_1))+x_2), ((x_1-(@1*x_2))+x_3), ((x_2-(@1*x_3))+x_4),
((x_3-(@1*x_4))+x_5), ((x_4-(@1*x_5))+x_6)]
```
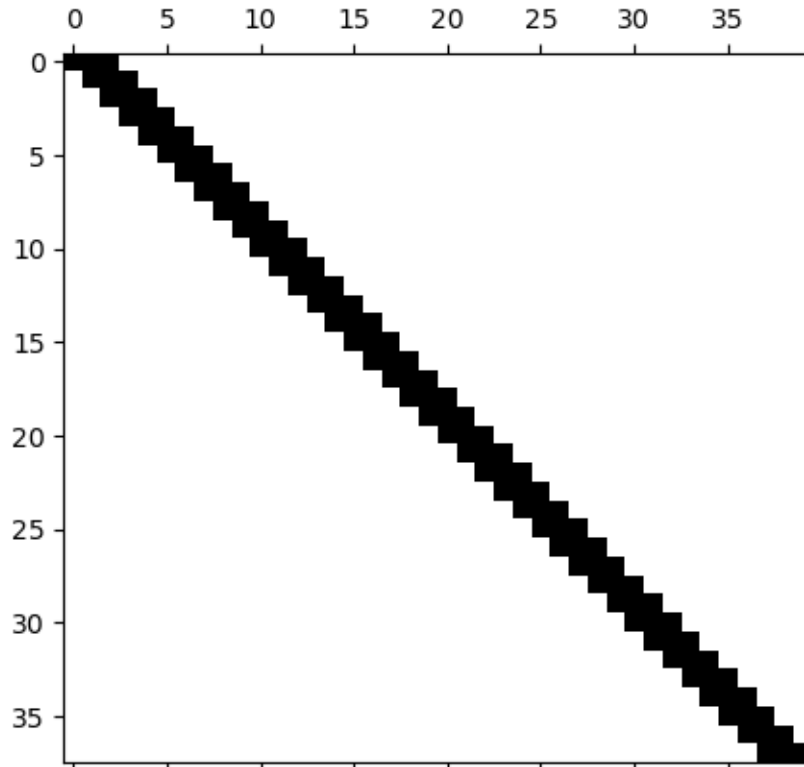
Next, we construct a function

```
[4]: f = Function("f", [x],[y])
```

And we visualize the sparsity of the jacobian

```
[5]: spy(f.sparsity_jac(0, 0))
```

[5]: <matplotlib.image.AxesImage at 0x7fd50c25a140>


```
[6]: show()
```