# sparsity_jac

April 4, 2023



## 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)]
```

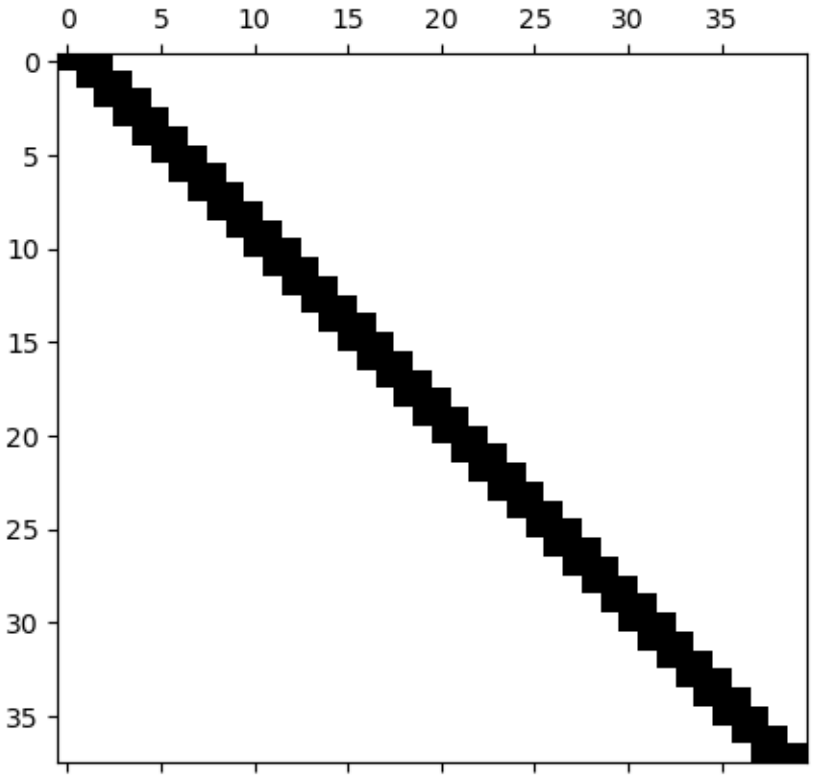
Next, we construct a function

[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 0x7f8994cb39d0>
```




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