Assignment06

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0.1 Assignment06

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0.1.3 GitHub : https://github.com/ChoiBowon/Assignment

0.1.4 Import packages for project - numpy.linalg is need for inverse matrix

```
In [72]: import numpy as np
         import matplotlib.pyplot as plt
         import numpy.linalg as lin
```

0.1.5 Define num, std, a, b

```
In [73]: num     = 201
         std     = 20
         a       = 2
         b       = 10
```

0.1.6 Define n, nn, x, y1

x is domain

y1 is result of equation

```
In [74]: n       = np.random.rand(num)
         nn      = n - np.mean(n)
         x       = np.linspace(-100,100,num)
         y1      = a * x + nn * std + b
         # y2      = a * x + b
```

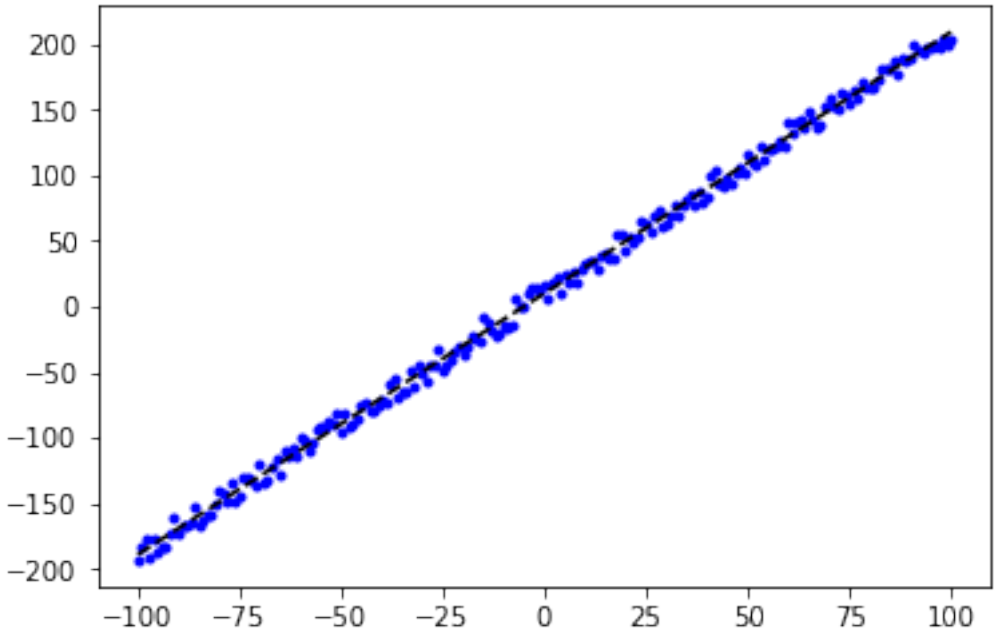
0.1.7 Initialize array of A matrix (coefficient matrix) and get xˆ as result using x = (ATA) 1ATb equation

0.1.8 Also get y2

```
In [75]: arr = np.ones((x.shape[0],2))
         arr.T[0] = x
```

```
result = np.dot(np.dot(lin.inv(np.dot(arr.T,arr)),arr.T),y1)
y2 = np.dot(arr, result)
```

In [76]:
```
plt.plot(x, y1, 'b.', x, y2, 'k--')
plt.show()
```



In [77]:
```
# x  : x-coordinate data
# y1 : (noisy) y-coordinate data
# y2 : (clean) y-coordinate data
# y = f(x) = a * x + b
```