Fast Forierre Transform

What does an FFT do?

1. Polynomial Evlauation
2. Polynomial Multiplication
    1. Convolution (statistics)
    2. Filtering
3. FFT is its own inverse

    All of the above steps can be done in *nlog(n)* time

Polynomial Multiplication

$A(x) = a_0 + a_1x + ... + a_dx^d$
$B(x) = b_0 + b_1x + ... + b_dx^d$
$C(x) = A(x) * B(x) = c_0 + ... + c_{2d}x^{2d}$
$C_k = a_0b_k + a_1b_{k-1} + ... + a_kb_0$
$C[m, n] = \sum_{i<\infty}$

Finding Elephants

Steps:

- Run a Convolution
- Max Pooling

Polynomial Multiplication pt. 2

1. Evaluate A(x) at specific points
2. Evlauate B(x) at special points
3. Multiply the Points
4. Interpolation