Autocorrelation Function

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2023-06-10

```
our_data <- c(1.6, 0.8, 1.2, 0.5, 0.9, 1.1, 1.1, 0.6, 1.5, 0.8, 0.9, 1.2, 0.5, 1.3, 0.8, 1.2)

print(length(our_data))
```

```
## [1] 16
```

```
print(our_data)
```

```
##  [1] 1.6 0.8 1.2 0.5 0.9 1.1 1.1 0.6 1.5 0.8 0.9 1.2 0.5 1.3 0.8 1.2
```

```
mean(our_data)
```

```
## [1] 1
```

```
x <- our_data[-length(our_data)]

print(length(x))
```

```
## [1] 15
```

```
print(x)
```

```
##  [1] 1.6 0.8 1.2 0.5 0.9 1.1 1.1 0.6 1.5 0.8 0.9 1.2 0.5 1.3 0.8
```

```
y <- our_data[-1]

print(length(y))
```

```
## [1] 15
```

```
print(y)
```

```
##  [1] 0.8 1.2 0.5 0.9 1.1 1.1 0.6 1.5 0.8 0.9 1.2 0.5 1.3 0.8 1.2
```

```
z <- y[-1]

print(length(z))
```

```
## [1] 14
```

```
print(z)
```

```
##  [1] 1.2 0.5 0.9 1.1 1.1 0.6 1.5 0.8 0.9 1.2 0.5 1.3 0.8 1.2
```

```
u <- z[-1]

print(length(u))
```

```
## [1] 13
```

```r
print(u)
```

```
##  [1] 0.5 0.9 1.1 1.1 0.6 1.5 0.8 0.9 1.2 0.5 1.3 0.8 1.2
```

```r
a <- x - mean(our_data)

b <- y - mean(our_data)

c <- a * b

print(c)
```

```
##  [1] -0.12 -0.04 -0.10  0.05 -0.01  0.01 -0.04 -0.20 -0.10  0.02 -0.02 -0.10
## [13] -0.15 -0.06 -0.04
```

```r
sum(c)
```

```
## [1] -0.9
```

```r
d <- x[-length(x)]

e <- d - mean(our_data)

f <- z - mean(our_data)

g <- e * f

print(g)
```

```
##  [1]  0.12  0.10 -0.02 -0.05 -0.01 -0.04  0.05  0.08 -0.05 -0.04  0.05  0.06
## [13]  0.10  0.06
```

```r
sum(g)
```

```
## [1] 0.41
```

```r
h <- d[-length(d)]

i <- h - mean(our_data)

j <- u - mean(our_data)

k <- i * j

print(k)
```

```
##  [1] -0.30  0.02  0.02 -0.05  0.04  0.05 -0.02  0.04  0.10  0.10 -0.03 -0.04
## [13] -0.10
```

```r
print(sum(k))
```

```
## [1] -0.17
```

```r
sum_of_deviation_squares <- sum((our_data - mean(our_data))^2)

sum_of_deviation_squares
```

```
## [1] 1.64
```

```
round(sum(c) / sum_of_deviation_squares, digits = 2)
```

```
## [1] -0.55
```

```
sum(g) / sum_of_deviation_squares
```

```
## [1] 0.25
```

```
round(sum(k) / sum_of_deviation_squares, digits = 2)
```

```
## [1] -0.1
```