RecoveringPatterns

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```
library (lsa)
```

```
## Loading required package: SnowballC
```

```
pattern <- runif(100,-1,1)
pattern[pattern <= 0] <- -1
pattern[pattern > 0 ] <- 1

pattern <- sample( c(1,-1), 100, replace=TRUE)



A <- sample( c(1,-1), 10, replace=TRUE)
B <- sample( c(1,-1), 10, replace=TRUE)

df<-data.frame(A,B)

examples <- A
#examples[c(3,9,7)]<-0

noise_vector <- c(0,1,0,1,0,1,0,1,0,1)
A*noise_vector
```

```
##  [1]  0  1  0 -1  0  1  0 -1  0 -1
```

```
random_noise_vector <- sample( c(0,1), 10, replace=TRUE)
random_noise_vector
```

```
##  [1] 1 0 1 1 1 1 0 0 1 0
```

```
exemplar_matrix <- matrix(rep(A,10),ncol=10, byrow=TRUE)
distortion_matrix <- matrix(sample( c(0,1), 100, replace=TRUE, prob=c(.1,.9)),
                            ncol=10)

exemplars <- exemplar_matrix*distortion_matrix

exemplars[1:10]
```

```
##  [1] -1 -1 -1 -1  0 -1  0 -1 -1 -1
```

```
#cor_table <- cor(t(exemplars))


#Similarity, Activation, and Content
get_echo <- function(probe, mem) {
    # compute similarities between probe and memories
    sim_vals <- c()
    for (m in 1:dim(mem)[1]) {
        sim_vals[m] <- cosine(probe, mem[m, ])
    }
    # Weight memories by similarity
    weighted_memory <- mem * (sim_vals^3)

    summed_echo <- colSums(weighted_memory)
    return(summed_echo)
}

echo_examplar <- get_echo(A, exemplars)

echo_recon <- get_echo(echo_examplar, exemplars)

echo_desired_values <- echo_recon/10

echo_test <- get_echo (echo_examplar, exemplar_matrix)/10
```

-Fedding echo into get_echo returns a vector almost identical to the echo (let this returned echo be called reconstructed echo) -The reconstructed echo has a pattern of values identical to that of the probe (in this case A) -The actual values are different, is this because the memory does not consist of A?

> -Using memory consisting solely of A, results in reconstructed echo with all the same value, and each value is close to A.

-Is it possible to get back the probe exactly, without inputting the exact probe as the value for the “probe” in get_echo

-Side note: how do I get an indentation, without increasing the size of the text?