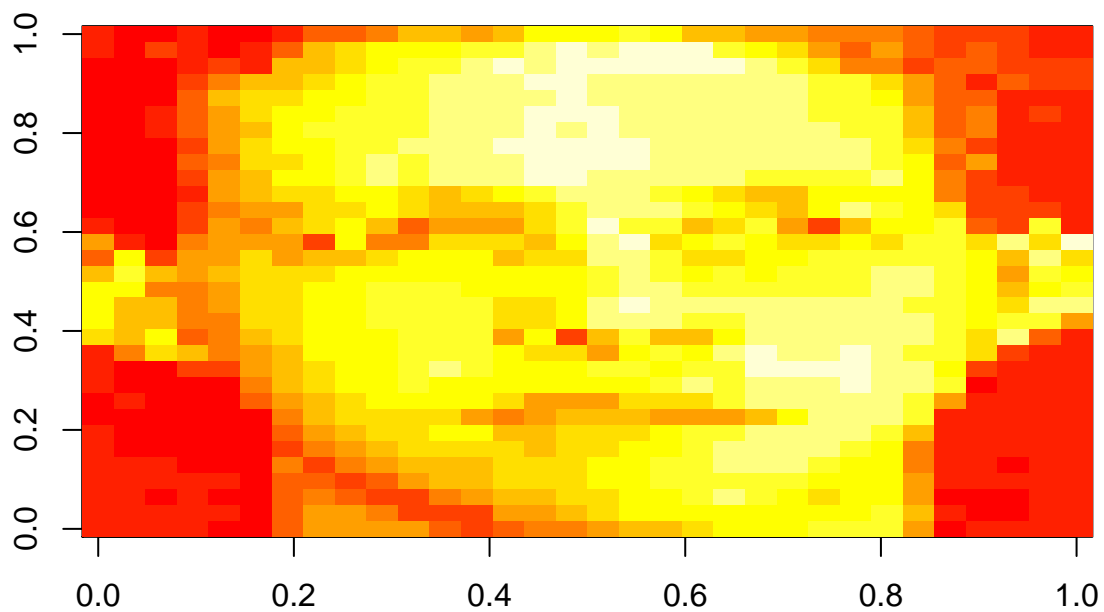# SVD Picture Compression

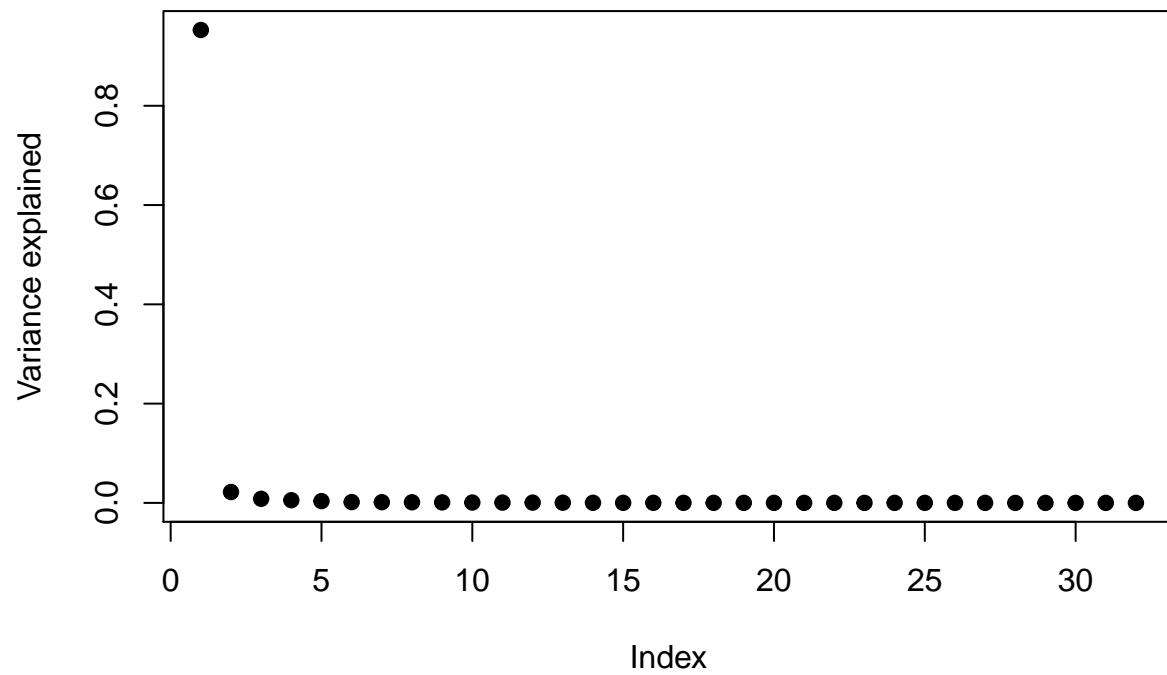Alexander Alexandrov

Friday, October 23, 2015

SVD Picture Compression

```
printImage <- function(data) image(t(data)[, nrow(data):1])
```

```
load("face.rda")
printImage(faceData)
```

```r
decomposedFace <- svd(faceData)
plot(decomposedFace$d^2 / sum(decomposedFace$d^2), ylab = "Variance explained", pch = 19)
```

```
reduceSVD <- function(s, rank) s$u[, 1:rank] %*% diag(s$d[1:rank]) %*% t(s$v[, 1:rank])

ranks <- c(2, 10)

par(mfrow = c(1, length(ranks) + 1))
for (rank in ranks) {
    printImage(reduceSVD(decomposedFace, rank))
}
printImage(faceData)
```