Breast Cancer Diagnosis

Data import & cleanness

```
# Import data
breast_cancer =
  read_csv("./data/breast-cancer.csv") %>%
  janitor::clean_names() %>%
  select(-c(1, 33)) %>%
  mutate(diagnosis = as.factor(recode(diagnosis, `M` = 1, `B` = 0))) %>%
  mutate_each_(funs(scale(.)), c(2:31))

# Standardize predictors
# Newton-Raphson Algorithm
pred_1 <- as.tibble(breast_cancer[2:11])
bc_scale1 <- cbind(rep(1, nrow(breast_cancer)), pred_1, breast_cancer$diagnosis)
names(bc_scale1) = c("intercept", names(breast_cancer)[2:11], "outcome")

# Coordinate-wise descending Algorithm
pred_2 <- as.tibble(breast_cancer[2:31])
bc_scale2 <- cbind(rep(1, nrow(breast_cancer)), pred_2, breast_cancer$diagnosis)
names(bc_scale1) = c("intercept", names(breast_cancer)[2:11], "outcome")
```

Likelihood function, Gradient, and Hessian matrix

Modified Newton-Raphson Algorithm

```
# Comparsion to `glm` func
```

Logistic-LASSO model

5-fold CV