Comparison of ensembling methods

Working comparison of ensembling methods on networks trained on half of CIFAR100 train set.

```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 4.0.5
```

```
library(dplyr)
```

```
## Warning: package 'dplyr' was built under R version 4.0.5
```

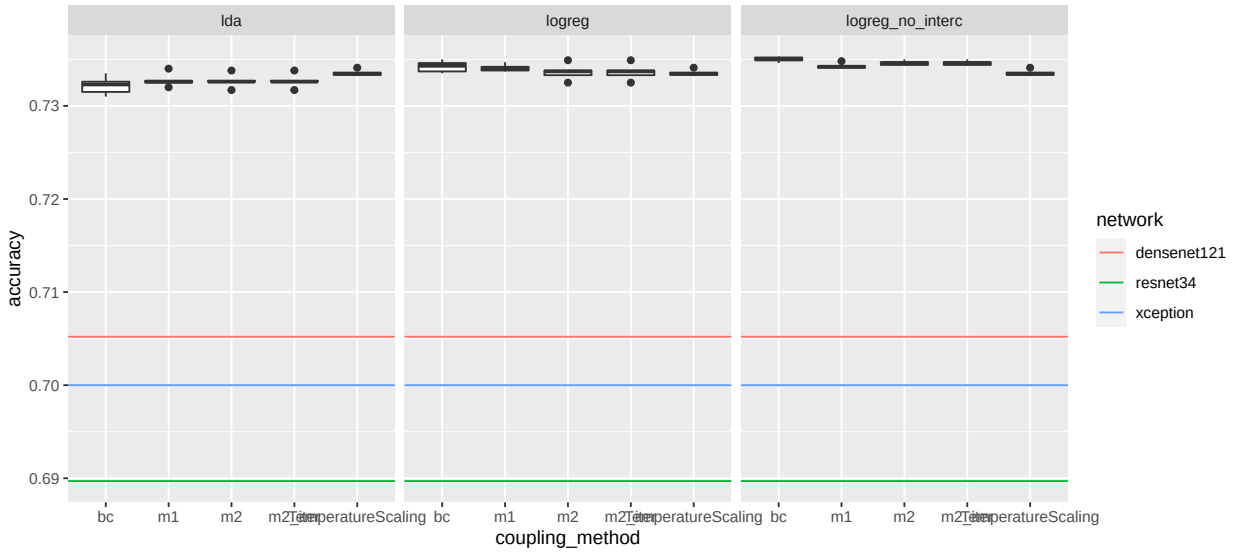
```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

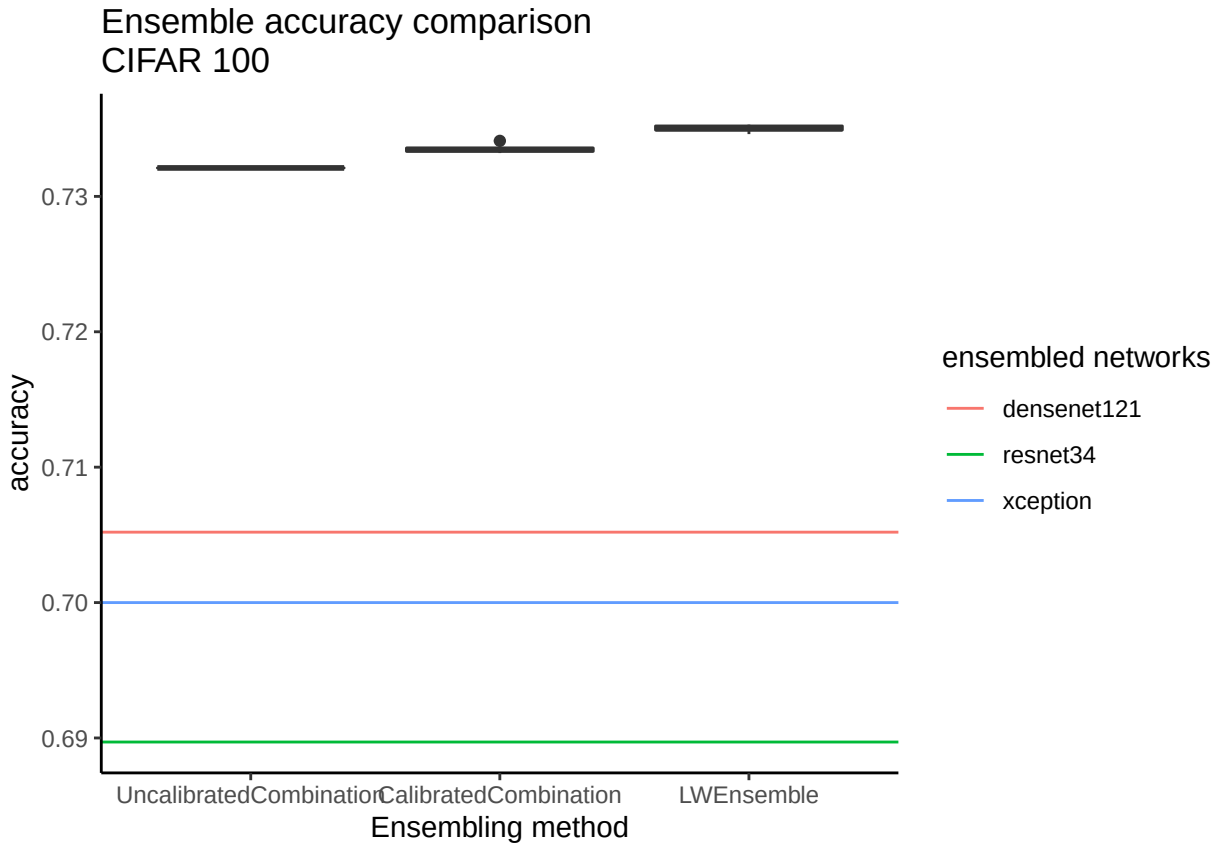
```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
base_dir <- "D:\\skola\\1\\weighted_ensembles\\tests\\test_cifar_2021\\data\\data_train_val_half_c100"
net_metrics <- read.csv(file.path(base_dir, "net_accuracies.csv"))
cp_ens_metrics <- read.csv(file.path(base_dir, "ensemble_accuracies.csv"))
cal_ens_metrics <- read.csv(file.path(
    base_dir, "0",
    "exp_subsets_sizes_calibration_outputs", "ens_metrics_val.csv"))
```

```
acc_plot <- ggplot() +
            geom_hline(data=net_metrics %>% filter(repli == 0),
                       mapping=aes(yintercept=accuracy, color=network)) +
            geom_boxplot(data=cp_ens_metrics %>% filter(repli == 0 & train_set == "tt"),
                         mapping=aes(x=coupling_method, y=accuracy)) +
            geom_boxplot(data=cal_ens_metrics %>% filter(train_size > 4000),
                         mapping=aes(x=calibrating_method, y=accuracy)) +
            facet_wrap(~combining_method)

acc_plot
```

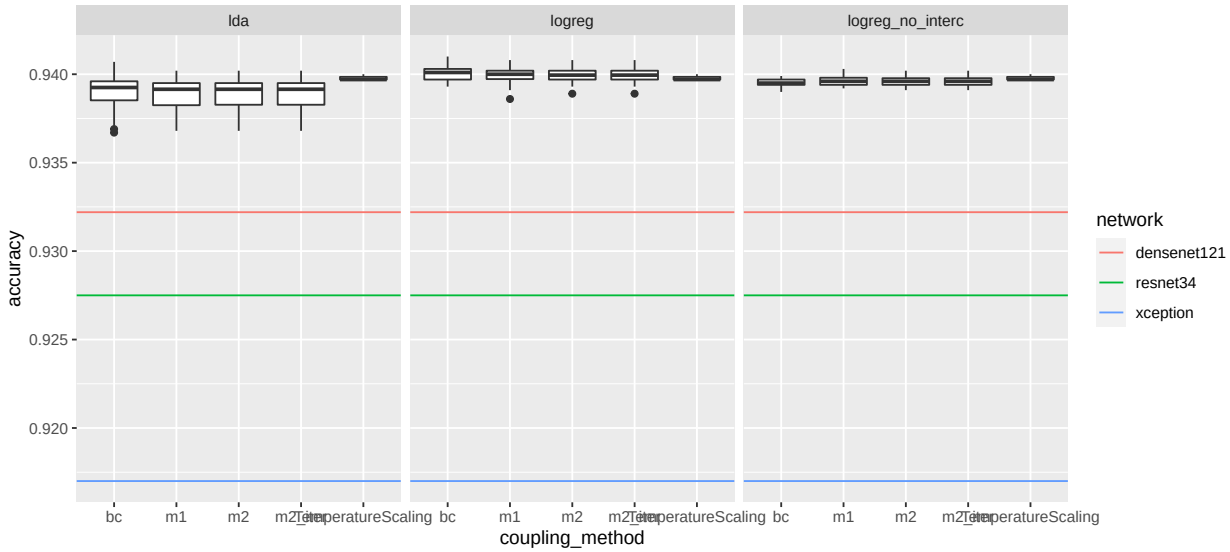



```
cp_e <- cp_ens_metrics %>% filter(repli == 0 &
                                  train_set == "tt" &
                                  combining_method == "logreg_no_interc" &
                                  coupling_method == "bc") %>%
                           select(fold, accuracy) %>%
                           mutate(ens="LWEnsemble")
cal_e <- cal_ens_metrics %>% filter(train_size > 4000) %>%
                             select(accuracy) %>%
                             mutate(ens="CalibratedCombination", fold=0)
ncal_e <- cal_ens_metrics %>% filter(calibrating_method == "NoCalibration") %>%
                              select(accuracy) %>%
                              mutate(ens="UncalibratedCombination", fold=0)

disp_ens <- bind_rows(cp_e, cal_e, ncal_e)


acc_plot <- ggplot() +
            geom_hline(data=net_metrics %>% filter(repli == 0),
                       mapping=aes(yintercept=accuracy, color=network)) +
            geom_boxplot(data=disp_ens,
                         mapping=aes(x=factor(ens, levels=c("UncalibratedCombination", "CalibratedCombi
            ggtitle("Ensemble accuracy comparison\nCIFAR 100") +
            xlab("Ensembling method") +
            scale_color_discrete(name="ensembled networks") +
            theme_classic()

# ggsave("acc_plot.svg", acc_plot, width=7, height=3)
acc_plot
```

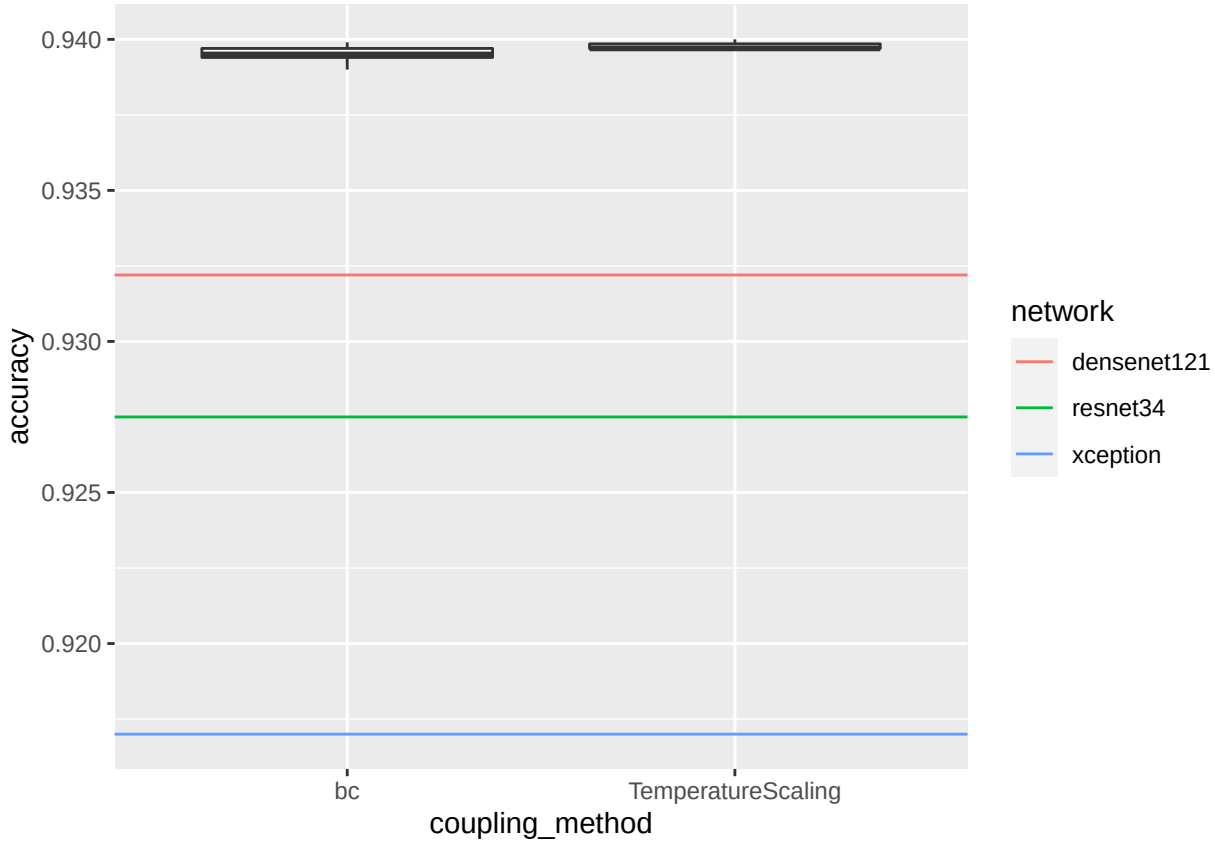



```
base_dir <- "D:\\skola\\1\\weighted_ensembles\\tests\\test_cifar_2021\\data\\data_train_val_half_c10"
net_metrics <- read.csv(file.path(base_dir, "net_accuracies.csv"))
cp_ens_metrics <- read.csv(file.path(base_dir, "ensemble_accuracies.csv"))
cal_ens_metrics <- read.csv(file.path(
    base_dir, "0",
    "exp_subsets_sizes_calibration_outputs", "ens_metrics_val.csv"))
```

```
acc_plot <- ggplot() +
            geom_hline(data=net_metrics %>% filter(repli == 0),
                       mapping=aes(yintercept=accuracy, color=network)) +
            geom_boxplot(data=cp_ens_metrics %>% filter(repli == 0 & train_set == "tt"),
                         mapping=aes(x=coupling_method, y=accuracy)) +
            geom_boxplot(data=cal_ens_metrics %>% filter(train_size > 4000),
                         mapping=aes(x=calibrating_method, y=accuracy)) +
            facet_wrap(~combining_method)

acc_plot
```




```
acc_plot <- ggplot() +
            geom_hline(data=net_metrics %>% filter(repli == 0),
                       mapping=aes(yintercept=accuracy, color=network)) +
            geom_boxplot(data=cp_ens_metrics %>% filter(repli == 0 &
                                                        train_set == "tt" &
                                                        combining_method == "logreg_no_interc" &
                                                        coupling_method == "bc"),
                         mapping=aes(x=coupling_method, y=accuracy)) +
            geom_boxplot(data=cal_ens_metrics %>% filter(train_size > 4000),
                         mapping=aes(x=calibrating_method, y=accuracy))

acc_plot
```


0.940
0.935
0.930
0.925
0.920
accuracy
bc
TemperatureScaling
coupling_method
network
densenet121
resnet34
xception