Pairwise accuracies comparison between networks and ensembles

```
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
```

```
library(tidyr)
```

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

```
library(ggpubr)
```

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

```
library(LDATS)
```

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

```
library(ggVennDiagram)
```

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

```
library(stringr)
library(abind)
```

```
## Warning: package 'abind' was built under R version 4.0.3
```

```
library(patchwork)
```

```
## Warning: package 'patchwork' was built under R version 4.0.3
```

```
source("utils.R")
```

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

```
## hash-2.2.6.1 provided by Decision Patterns
```

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

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

```
##
## Attaching package: 'berryFunctions'
```

```
## The following object is masked from 'package:ggVennDiagram':
##
##     circle
```

```
## The following object is masked from 'package:dplyr':
##
##     between
```

```
## Warning: package 'purrr' was built under R version 4.0.3
```

```
## Warning: package 'reshape2' was built under R version 4.0.3
```

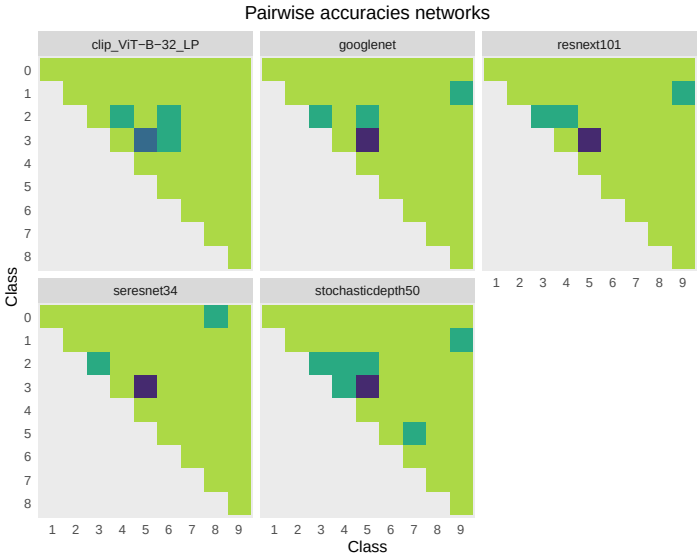
```
##
## Attaching package: 'reshape2'
```

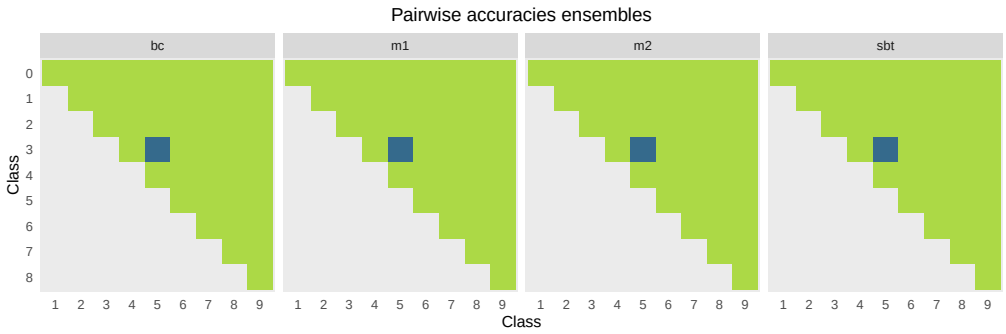
```
## The following object is masked from 'package:tidyr':
##
##     smiths
```

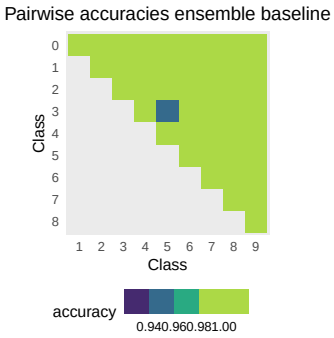
#CIFAR-10

```
base_dir <- "../data/data_tv_5000_c10/0/exp_pairwise_acc_nets_vs_ens"
net_df <- read.csv(file.path(base_dir, "net_pairwise_acc.csv"))
cal_ens_df <- read.csv(file.path(base_dir, "ens_baseline_pairwise_acc.csv"))
ens_df <- read.csv(file.path(base_dir, "ens_pairwise_acc.csv"))

net_df[, c("class1", "class2")] <- lapply(net_df[, c("class1", "class2")], as.factor)
cal_ens_df[, c("class1", "class2")] <- lapply(cal_ens_df[, c("class1", "class2")], as.factor)
ens_df[, c("class1", "class2")] <- lapply(ens_df[, c("class1", "class2")], as.factor)
```

```r
acc_limits <- c(min(min(net_df$accuracy), min(ens_df$accuracy), min(cal_ens_df$accuracy)), 1.0)

net_plot <- net_df %>%
    ggplot(mapping = aes(x = class2, y = class1, fill = accuracy)) + geom_raster() + facet_wrap(~networ
    xlab("Class") +
    ylab("Class") +
    scale_y_discrete(limits = rev) +
    scale_fill_binned(type = "viridis", limits = acc_limits,  name = "accuracy") +
    coord_fixed() +
    ggtitle("Pairwise accuracies networks") +
    theme(plot.title = element_text(hjust = 0.5),
      axis.ticks = element_blank(),
      panel.grid.major = element_blank(),
      panel.grid.minor = element_blank())

ens_plot <- ens_df %>%
    ggplot(mapping = aes(x = class2, y = class1, fill = accuracy)) + geom_raster() +
    facet_wrap(~coupling_method, nrow = 1) +
    xlab("Class") +
    ylab("Class") +
    scale_y_discrete(limits = rev) +
    coord_fixed() +
    ggtitle("Pairwise accuracies ensembles") +
    scale_fill_binned(type = "viridis", limits = acc_limits, name = "accuracy") +
    theme(plot.title = element_text(hjust = 0.5),
      axis.ticks = element_blank(),
      panel.grid.major = element_blank(),
      panel.grid.minor = element_blank())

ens_bsln_plot <- cal_ens_df %>%
    ggplot(mapping = aes(x = class2, y = class1, fill = accuracy)) + geom_raster() +
    xlab("Class") +
    ylab("Class") +
    scale_y_discrete(limits = rev) +
    coord_fixed() +
    ggtitle("Pairwise accuracies ensemble baseline") +
    scale_fill_binned(type = "viridis", limits = acc_limits, name = "accuracy") +
    theme(plot.title = element_text(hjust = 0.5),
      axis.ticks = element_blank(),
      panel.grid.major = element_blank(),
      panel.grid.minor = element_blank())

    print(ggarrange(net_plot, ens_plot, ens_bsln_plot, ncol = 1, nrow = 3, heights = c(2.0, 1.2, 1.0),
        guides(x = guide_axis(angle = 45)))
```


Pairwise accuracies networks
clip_ViT−B−32_LP
googlenet
resnext101
seresnet34
stochasticdepth50
Class
Class


Pairwise accuracies ensembles
bc
m1
m2
sbt
Class
Class


Pairwise accuracies ensemble baseline
Class
Class
accuracy
0.940.960.981.00