# FER Facial Emotion Recognition Analysis

Riccardo Ruta

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## Contents

# FER: Facial Emotion Recognition Analysis

**Report on the analysis made with FER Python package**

## Import the datasets

```
# CONTE
Conte_07_03_22_00 <- read_csv("data/video_emotions/Conte_07-03-22_00.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Conte_09_03_22_00 <- read_csv("data/video_emotions/Conte_09-03-22_00.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Conte_22_02_22_00 <- read_csv("data/video_emotions/Conte_22-02-22_00.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Conte_23_02_22_00 <- read_csv("data/video_emotions/Conte_23-02-22_00.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Conte_23_02_22_01 <- read_csv("data/video_emotions/Conte_23-02-22_01.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Conte_24_02_22_01 <- read_csv("data/video_emotions/Conte_24-02-22_01.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Conte_28_02_22_00 <- read_csv("data/video_emotions/Conte_28-02-22_00.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
# LETTA
Letta_03_03_22_00 <- read_csv("data/video_emotions/Letta_03-03-22_00.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Letta_06_04_22_00 <- read_csv("data/video_emotions/Letta_06-04-22_00.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
# MELONI
Meloni_1_03_2022 <- read_csv("data/video_emotions/Meloni_1-03-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Meloni_11_03_2022_02 <- read_csv("data/video_emotions/Meloni_11-03-2022_02.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Meloni_11_03_2022 <- read_csv("data/video_emotions/Meloni_11-03-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Meloni_15_03_2022 <- read_csv("data/video_emotions/Meloni_15-03-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Meloni_22_03_2022 <- read_csv("data/video_emotions/Meloni_22-03-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Meloni_29_03_2022 <- read_csv("data/video_emotions/Meloni_29-03-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Meloni_31_03_2022<- read_csv("data/video_emotions/Meloni_31-03-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
# RENZI
Renzi_19_04_2022 <- read_csv("data/video_emotions/Renzi_19-04-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Renzi_30_03_2022 <- read_csv("data/video_emotions/Renzi_30-03-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
# SALVINI
Salvini_08_03_2022 <- read_csv("data/video_emotions/Salvini_08-03-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Salvini_08_04_2022_02 <- read_csv("data/video_emotions/Salvini_08-04-2022_02.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

```
Salvini_16_03_2022 <- read_csv("data/video_emotions/Salvini_16-03-2022.csv",
    col_types = cols(angry = col_number(),
        disgust = col_number(), fear = col_number(),
        happy = col_number(), sad = col_number(),
        surprise = col_number(), neutral = col_number()))
```

```
## New names:
## * `` -> `...1`
```

### Conte datasets

```
#1
# Conte_07_03_22_00
Conte_07_03_22_00_prop <- c(
  angry <-  sum(Conte_07_03_22_00$angry),
  disgust <- sum(Conte_07_03_22_00$disgust),
  fear <- sum(Conte_07_03_22_00$fear),
  happy <- sum(Conte_07_03_22_00$happy),
  sad <- sum(Conte_07_03_22_00$sad),
  surprise <- sum(Conte_07_03_22_00$surprise),
  meutral <- sum(Conte_07_03_22_00$neutral)
)
```

```
#2
# Conte_09_03_22_00
Conte_09_03_22_00_prop <- c(
  angry <-  sum(Conte_09_03_22_00$angry),
  disgust <- sum(Conte_09_03_22_00$disgust),
  fear <- sum(Conte_09_03_22_00$fear),
  happy <- sum(Conte_09_03_22_00$happy),
  sad <- sum(Conte_09_03_22_00$sad),
  surprise <- sum(Conte_09_03_22_00$surprise),
  meutral <- sum(Conte_09_03_22_00$neutral)
)
```

```
#3
# Conte_22_02_22_00
i = Conte_22_02_22_00
Conte_22_02_22_00_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#4
# Conte_23_02_22_00
i = Conte_23_02_22_00
Conte_23_02_22_00_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#5
# Conte_23_02_22_01
i = Conte_23_02_22_01
Conte_23_02_22_01_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#6
# Conte_24_02_22_01
i = Conte_24_02_22_01
Conte_24_02_22_01_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#7
# Conte_28_02_22_00
i = Conte_28_02_22_00
Conte_28_02_22_00_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
conte <- rbind(Conte_07_03_22_00_prop,
               Conte_09_03_22_00_prop,
               Conte_22_02_22_00_prop,
               Conte_23_02_22_00_prop,
               Conte_23_02_22_01_prop,
               Conte_24_02_22_01_prop,
               Conte_28_02_22_00_prop
               )
emo_label <- colnames(Conte_07_03_22_00)[3:9]

colnames(conte) <- emo_label

conte <- as.data.frame(conte)
```

```
tot_conte <- max(Conte_07_03_22_00$...1) +
              max(Conte_09_03_22_00$...1) +
              max(Conte_22_02_22_00$...1) +
              max(Conte_23_02_22_00$...1) +
              max(Conte_23_02_22_01$...1) +
              max(Conte_24_02_22_01$...1) +
              max(Conte_28_02_22_00$...1)

conte[8,] <- c(sum(conte$angry)/tot_conte * 100,
               sum(conte$disgust)/tot_conte *100,
               sum(conte$fear)/tot_conte *100,
               sum(conte$happy)/tot_conte *100,
               sum(conte$sad)/tot_conte *100,
               sum(conte$surprise)/tot_conte * 100,
               sum(conte$neutral)/tot_conte *100)
```

### Letta datasets

```
#1
# Letta_03_03_22_00
i = Letta_03_03_22_00
Letta_03_03_22_00_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#2
# Letta_06_04_22_00
i = Letta_06_04_22_00
Letta_06_04_22_00_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
letta <- rbind(Letta_03_03_22_00_prop,
               Letta_06_04_22_00_prop
               )
colnames(letta) <- emo_label

letta <- as.data.frame(letta)
```

```
tot_letta <- max(Letta_03_03_22_00$...1) +
              max(Letta_06_04_22_00$...1)

letta[3,] <- c(sum(letta$angry)/tot_letta * 100,
               sum(letta$disgust)/tot_letta *100,
               sum(letta$fear)/tot_letta *100,
               sum(letta$happy)/tot_letta *100,
               sum(letta$sad)/tot_letta *100,
               sum(letta$surprise)/tot_letta * 100,
               sum(letta$neutral)/tot_letta *100)
```

## Meloni datasets

```
#1
# Meloni_1_03_2022
i = Meloni_1_03_2022
Meloni_1_03_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#2
# Meloni_11_03_2022_02
i = Meloni_11_03_2022_02
Meloni_11_03_2022_02_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#3
# Meloni_11_03_2022
i = Meloni_11_03_2022
Meloni_11_03_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#4
# Meloni_15_03_2022
i = Meloni_15_03_2022
Meloni_15_03_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#5
# Meloni_22_03_2022
i = Meloni_22_03_2022
Meloni_22_03_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#6
# Meloni_29_03_2022
i = Meloni_29_03_2022
Meloni_29_03_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#7
# Meloni_31_03_2022
i = Meloni_31_03_2022
Meloni_31_03_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
meloni <- rbind(Meloni_1_03_2022_prop,
                Meloni_11_03_2022_02_prop,
                Meloni_11_03_2022_prop,
                Meloni_15_03_2022_prop,
                Meloni_22_03_2022_prop,
                Meloni_29_03_2022_prop,
                Meloni_31_03_2022_prop
                )
colnames(meloni) <- emo_label

meloni <- as.data.frame(meloni)


tot_meloni <- max(Meloni_1_03_2022$...1) +
              max(Meloni_11_03_2022_02$...1)+
              max(Meloni_11_03_2022$...1)+
              max(Meloni_15_03_2022$...1)+
              max(Meloni_22_03_2022$...1)+
              max(Meloni_29_03_2022$...1)+
              max(Meloni_31_03_2022$...1)

meloni[8,] <- c(sum(meloni$angry)/tot_meloni * 100,
                sum(meloni$disgust)/tot_meloni *100,
                sum(meloni$fear)/tot_meloni *100,
                sum(meloni$happy)/tot_meloni *100,
                sum(meloni$sad)/tot_meloni *100 ,
                sum(meloni$surprise)/tot_meloni * 100,
                sum(meloni$neutral)/tot_meloni *100)
```

### Renzi datasets

```
#1
# Renzi_19_04_2022
i = Renzi_19_04_2022
Renzi_19_04_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#2
# Renzi_30_03_2022
i = Renzi_30_03_2022
Renzi_30_03_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
```

```
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
renzi <- rbind(Renzi_19_04_2022_prop,
               Renzi_30_03_2022_prop
               )
colnames(renzi) <- emo_label

renzi <- as.data.frame(renzi)

tot_renzi <- max(Renzi_19_04_2022$...1) +
              max(Renzi_30_03_2022$...1)

renzi[3,] <- c(sum(renzi$angry)/tot_renzi * 100,
               sum(renzi$disgust)/tot_renzi * 100,
               sum(renzi$fear)/tot_renzi * 100,
               sum(renzi$happy)/tot_renzi * 100,
               sum(renzi$sad)/tot_renzi * 100,
               sum(renzi$surprise)/tot_renzi * 100,
               sum(renzi$neutral)/tot_renzi * 100)
```

### Salvini datasets

```
#1
# Salvini_08_03_2022
i = Salvini_08_03_2022
Salvini_08_03_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#2
# Salvini_08_04_2022_02
i = Salvini_08_04_2022_02
Salvini_08_04_2022_02_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
#3
# Salvini_16_03_2022
i = Salvini_16_03_2022
Salvini_16_03_2022_prop <- c(
  angry <-  sum(i$angry),
  disgust <- sum(i$disgust),
  fear <- sum(i$fear),
  happy <- sum(i$happy),
  sad <- sum(i$sad),
  surprise <- sum(i$surprise),
  meutral <- sum(i$neutral)
)
```

```
salvini <- rbind(Salvini_08_03_2022_prop,
                 Salvini_08_04_2022_02_prop,
                 Salvini_16_03_2022_prop
                 )
colnames(salvini) <- emo_label

salvini <- as.data.frame(salvini)

tot_salvini <- max(Salvini_08_03_2022$...1) +
                 max(Salvini_08_04_2022_02$...1)+
                 max(Salvini_16_03_2022$...1)

salvini[4,] <- c(sum(salvini$angry)/tot_salvini * 100,
                   sum(salvini$disgust)/tot_salvini * 100,
                 sum(salvini$fear)/tot_salvini * 100,
                 sum(salvini$happy)/tot_salvini * 100,
                 sum(salvini$sad)/tot_salvini * 100,
                 sum(salvini$surprise)/tot_salvini * 100,
                 sum(salvini$neutral)/tot_salvini * 100)
```

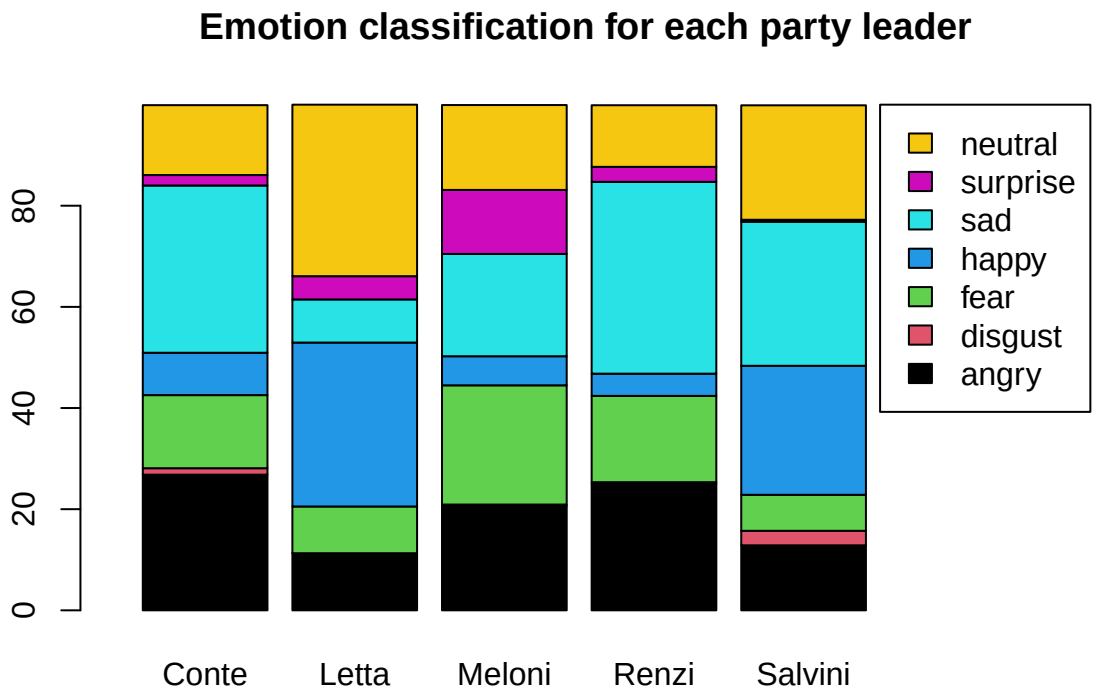
## Create dataset with the proportion of the emotions registered for each leader

```
emotions <- rbind(conte[8,], letta[3,], meloni[8,],
                  renzi [3,], salvini[4,])

emotions <- as.data.frame(emotions)

rownames(emotions) <- c("Conte", "Letta","Meloni", "Renzi", "Salvini")

kable(emotions)
```

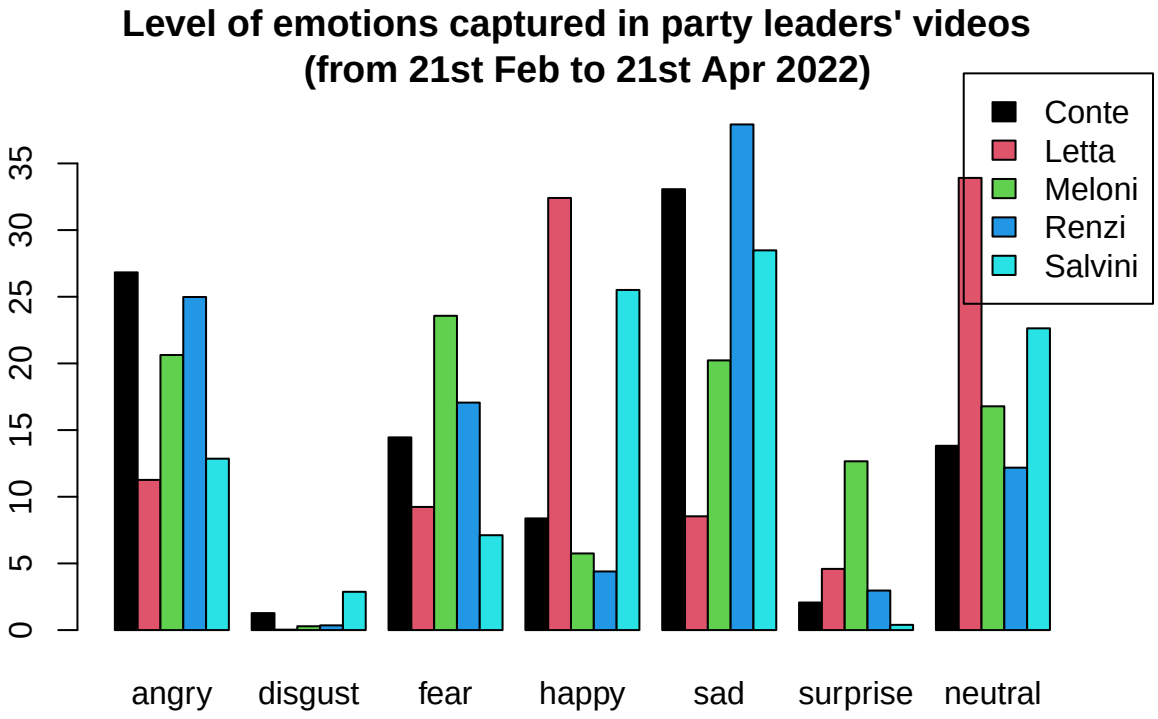
| | angry | disgust | fear | happy | sad | surprise | neutral |
|---|---|---|---|---|---|---|---|
| Conte | 26.82598 | 1.2745357 | 14.453157 | 8.376083 | 33.067107 | 2.0669418 | 13.82099 |
| Letta | 11.26310 | 0.0342991 | 9.236472 | 32.409459 | 8.532808 | 4.5901150 | 33.91223 |
| Meloni | 20.63115 | 0.2883622 | 23.570927 | 5.747407 | 20.226604 | 12.6588713 | 16.78353 |
| Renzi | 24.98139 | 0.3537467 | 17.060469 | 4.398206 | 37.923233 | 2.9666313 | 12.18218 |
| Salvini | 12.85566 | 2.8709759 | 7.116432 | 25.509843 | 28.479119 | 0.3918993 | 22.63165 |

### Results

```
matrix <- as.matrix(emotions)


barplot(t(matrix),
        col = 1:ncol(matrix),
        legend.text = TRUE,
        args.legend = list(x = "topright"),
         xlim=c(0,7.5),
        main = "Emotion classification for each party leader"
        )
```




```
barplot(matrix,
        col = 1:nrow(matrix),
        legend.text = TRUE,
        args.legend = list(x = "topright",
                           inset = c(- 0.065, -0.1)),
        beside = T,
        main = "Level of emotions captured in party leaders' videos \n (from 21st Feb to 21st Apr 2022)
```


Level of emotions captured in party leaders' videos
(from 21st Feb to 21st Apr 2022)
Conte
Letta
Meloni
Renzi
Salvini
0
5
10
15
20
25
30
35
angry
disgust
fear
happy
sad
surprise
neutral

.