



Erasmus+



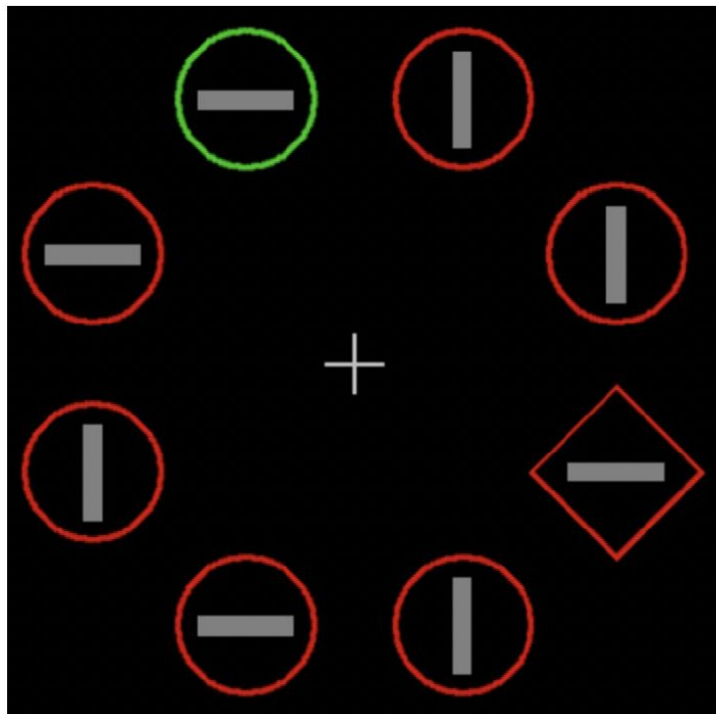
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Introduction to eye-movement data analysis with PsychoPy

Fredrik Allenmark



Salient distractor



Search target



- Preprocessing
- First fixation proportion and heat map
- Distractor and target fixation duration
- First saccade latency

- The eye-trackers native format is the .edf file but PsychoPy can also save the eye-movement data in the .hdf5 format
- In R the “hdf5r” package can be used to read this format:
<https://cran.r-project.org/web/packages/hdf5r/index.html>
- In Python h5py can be used:
<https://www.h5py.org/>

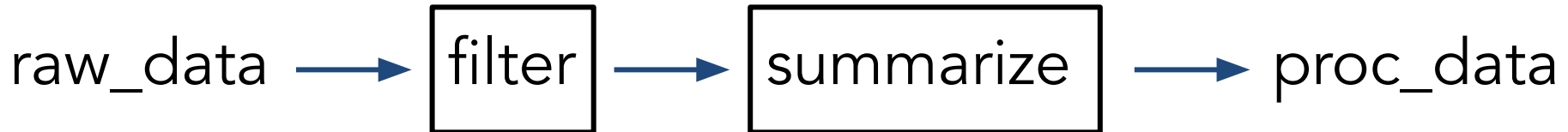
- Tidyverse is an R package for data-manipulation
- It lets you filter data, summarize, create new columns, etc.



Hadley Wickham -
creator of tidyverse

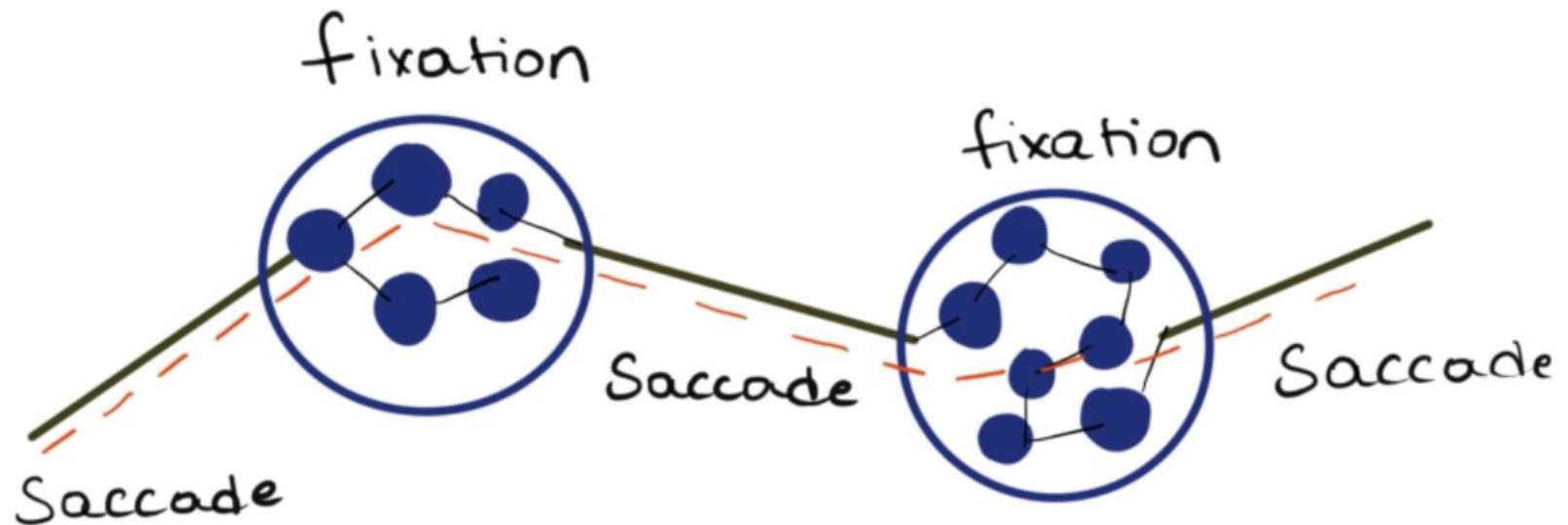
- Tidyverse (and R more broadly) organizes data as “data frames” - similar to excel sheets
- The “pipe” operator “%>%” is used to perform multiple operations in a row on the data, e.g.:

```
proc_data <- raw_data %>% filter(...) %>% summarize(...)
```



- filter: filter data, e.g. remove outliers:
 - `data %>% filter(rt > 0.2, rt < 2)`
- mutate: add new column
 - e.g. `data %>% mutate(rt_diff = rt_cond1 - rt_cond2)`
- summarize: summarize
 - e.g. `data %>% summarize(m_rt = mean(rt), sd_rt = sd(rt))`

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- Fixations are periods of relatively slow and small eye-movements (microsaccades)

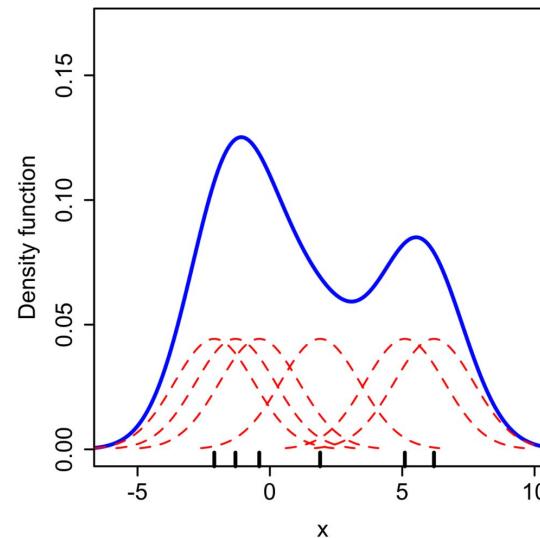
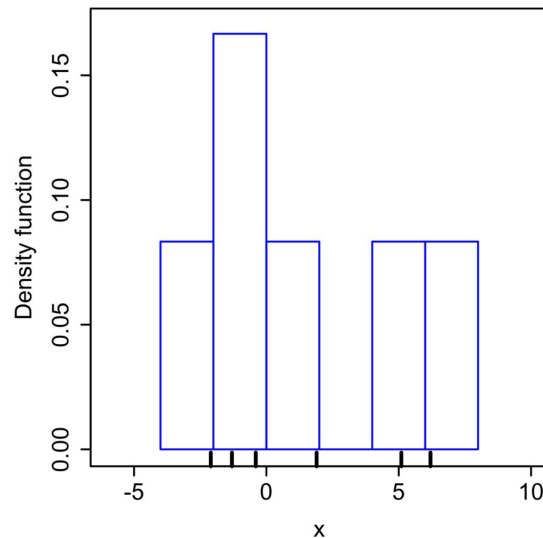


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- We need to find out which trial each fixation and saccade is from

- We will use the timing of the messages to match each fixation/saccade with the correct trial

- We will now analyze the landing positions of the first saccade after search display appearance
- To plot a heat map of the fixation locations we will use kernel density estimation



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