

Part 0

basic of psychtoolbox

How to use Screen to draw figures

MATLAB for Psychologists, Chap.9, Psychtoolbox: Video
<https://webdav.tuebingen.mpg.de/u/zli/MatlabForPsychologist.pdf>

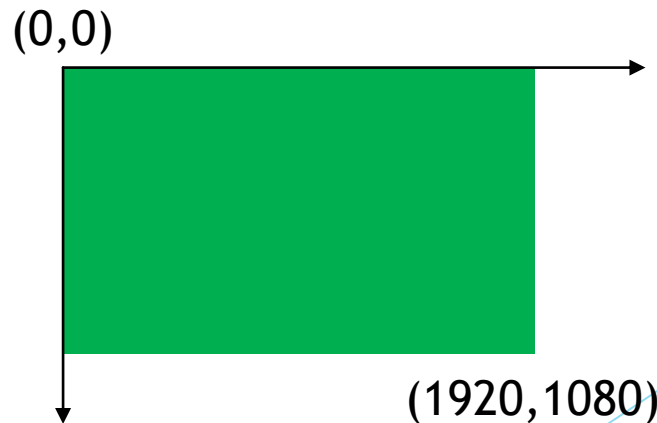
1. Opening the window

```
[windowPtr, rect] = screen('OpenWindow', 0, [0, 255, 0]);
```

- Screen function and its subfunctions.
- 0: which monitor you want to take control.
- [0, 255, 0]: RGB triplet to specify the screen background color.
- windowPtr : the pointer to the screen you opened.
- rect: screen coordinates in pixels. [left, top, right, bottom],
[0 0 1920 1080]



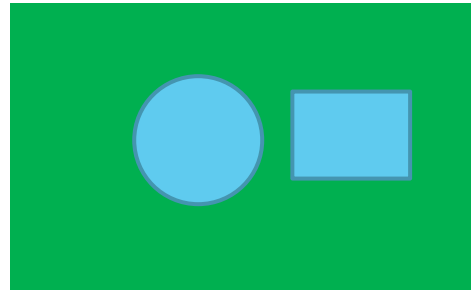
Front buffer/ onscreen
Visible



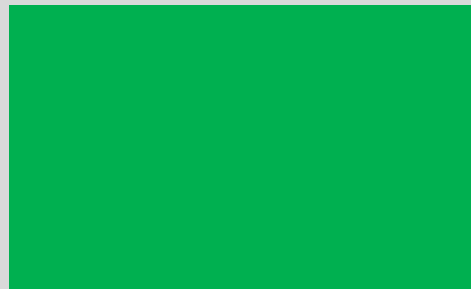
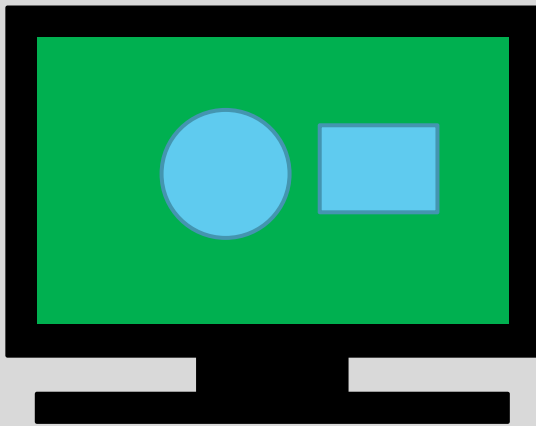
Background buffer/ offscreen
Invisible

2. Drawing

- The figure is automatically drawn in the background buffer
- E.g. `Screen('DrawOval');`



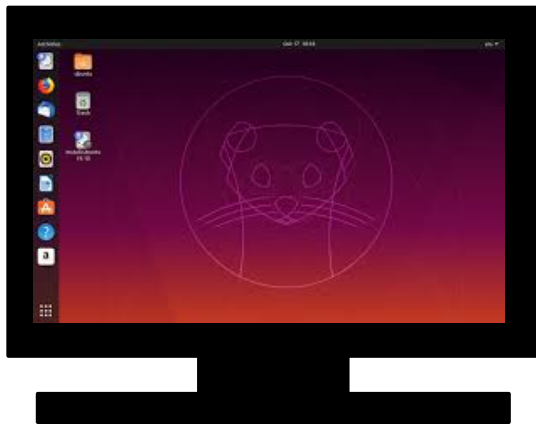
- `Screen('Flip', windowPtr)`
- The Flip subfunction moves the previously drawn figure from the backbuffer to the foreground so that it becomes visible on screen.
- Clear everything in background buffer.



3. Closing the window

```
screen('CloseAll');
```

Release all video buffers and return screen control to OS.



Demos this afternoon

Official demos: 'PTBpath' / PsychDemos/

<https://peterscarfe.com/ptbtutorials.html>

(1) The basics

(2) Drawing basic shapes and dots: single dots, square

(9) 3D stimuli with stereoscopic presentation:

[Square In Depth Demo](#)

[Slanted Surface Demo](#)

Modification:

e.g. replace all dots with squares;

replace only one specified dot with squares;

reverse the depth;

Part I

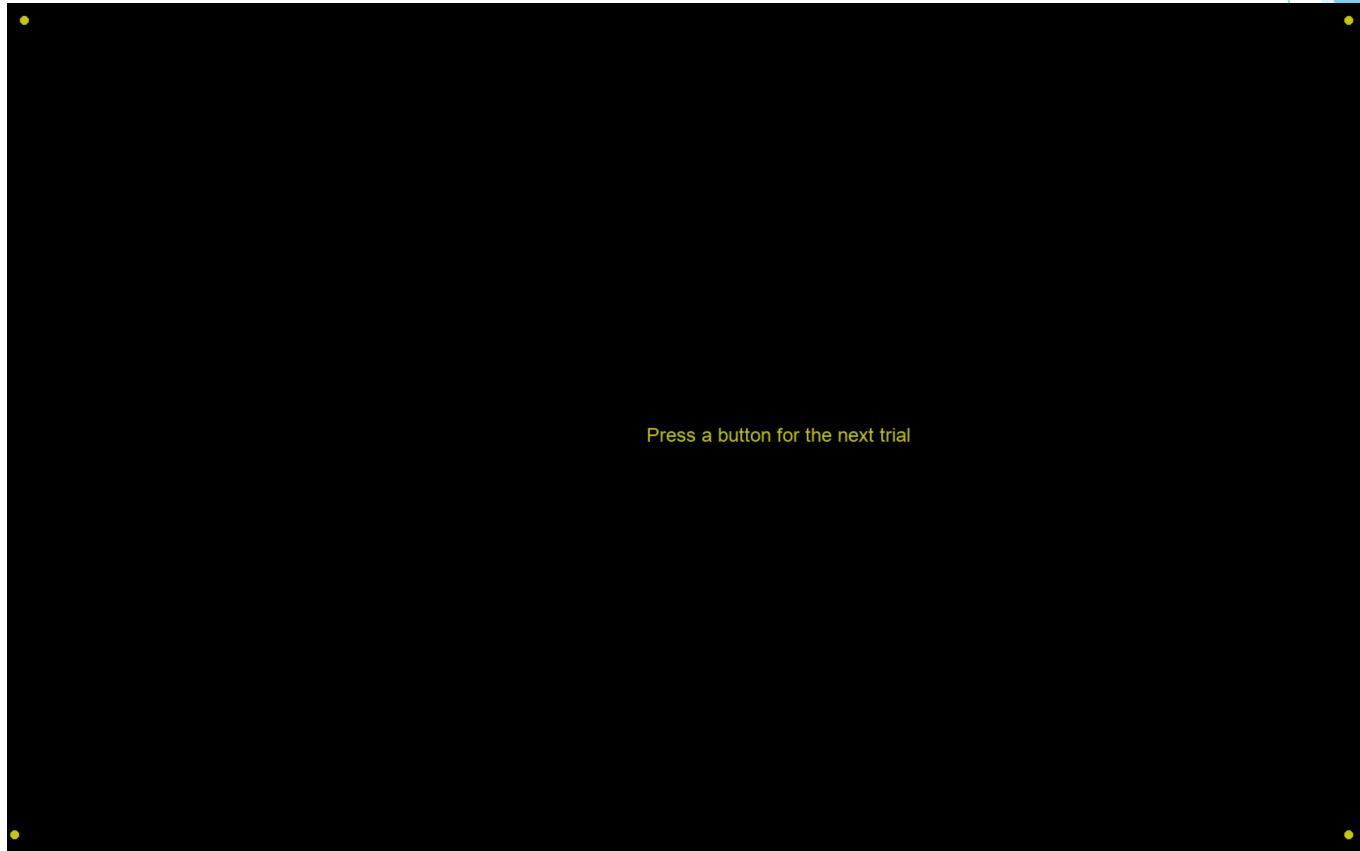
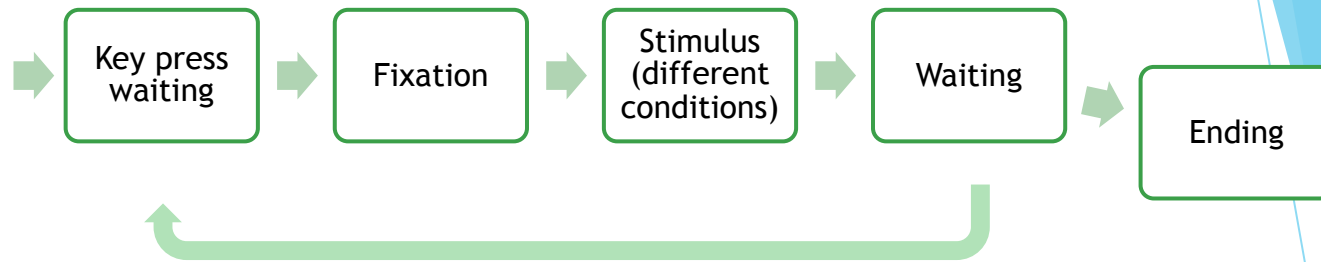
Stimulus and conditions

Eye-of-origin singleton project

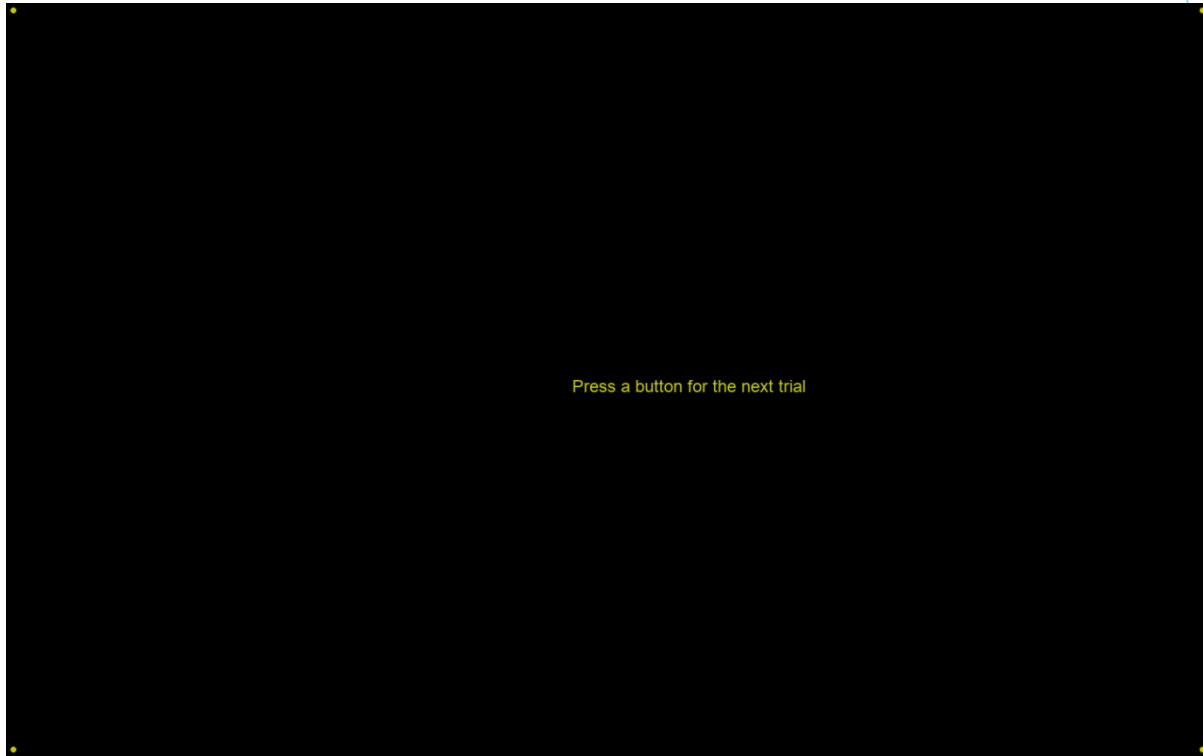
Zhaoping Li's department, MPI

Jinyou Zou

Stimulus procedure



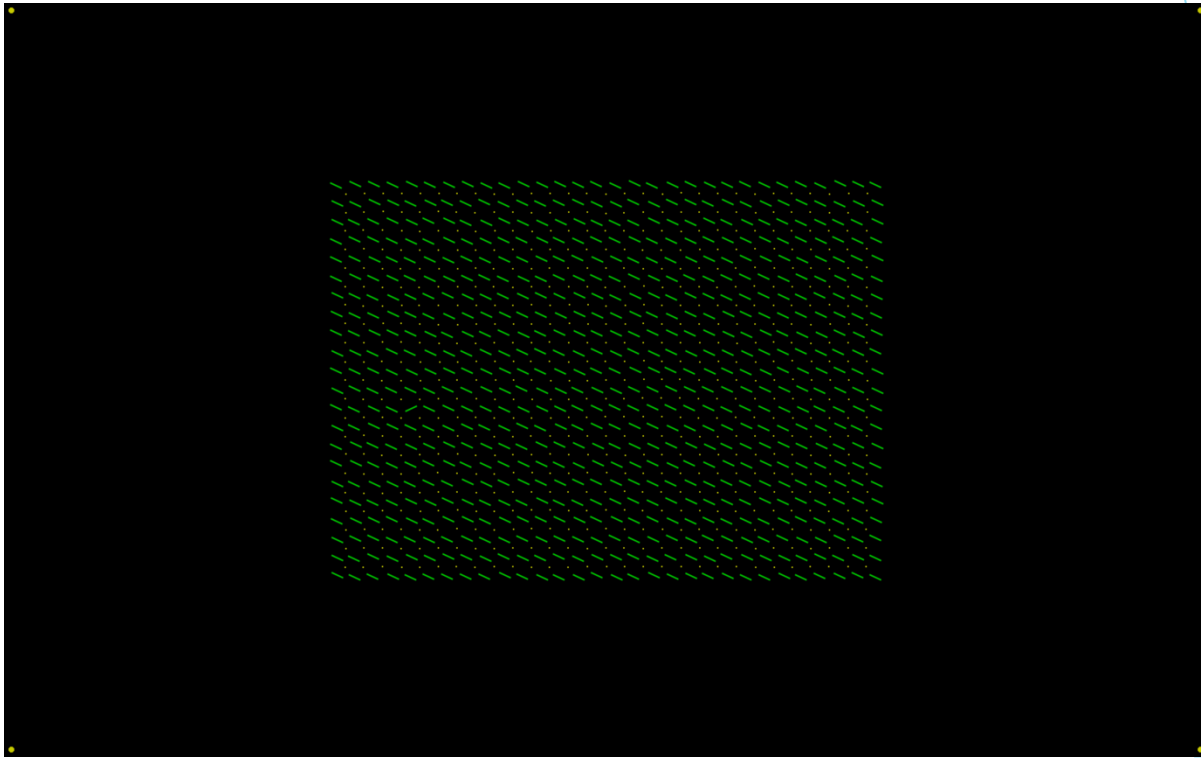
1. Wait for key press to start next trial



2. Show fixation for 1200 ms

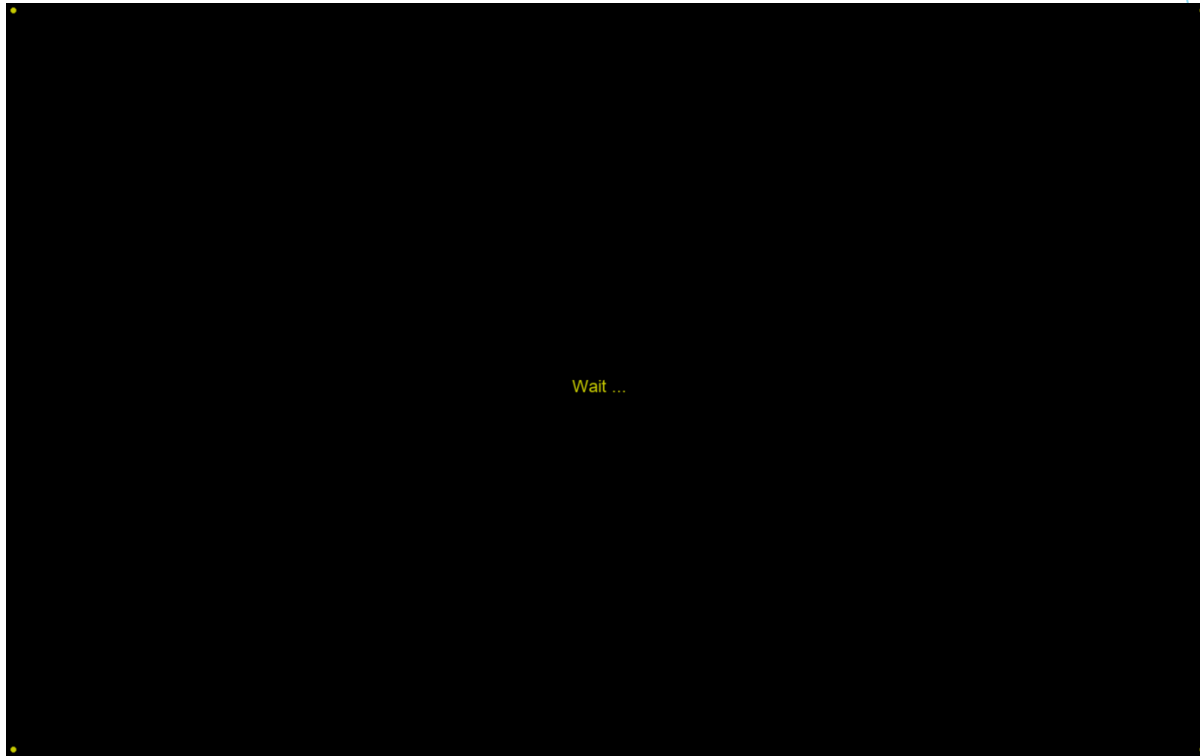


3. Show stimulus until subject's responses (key press)



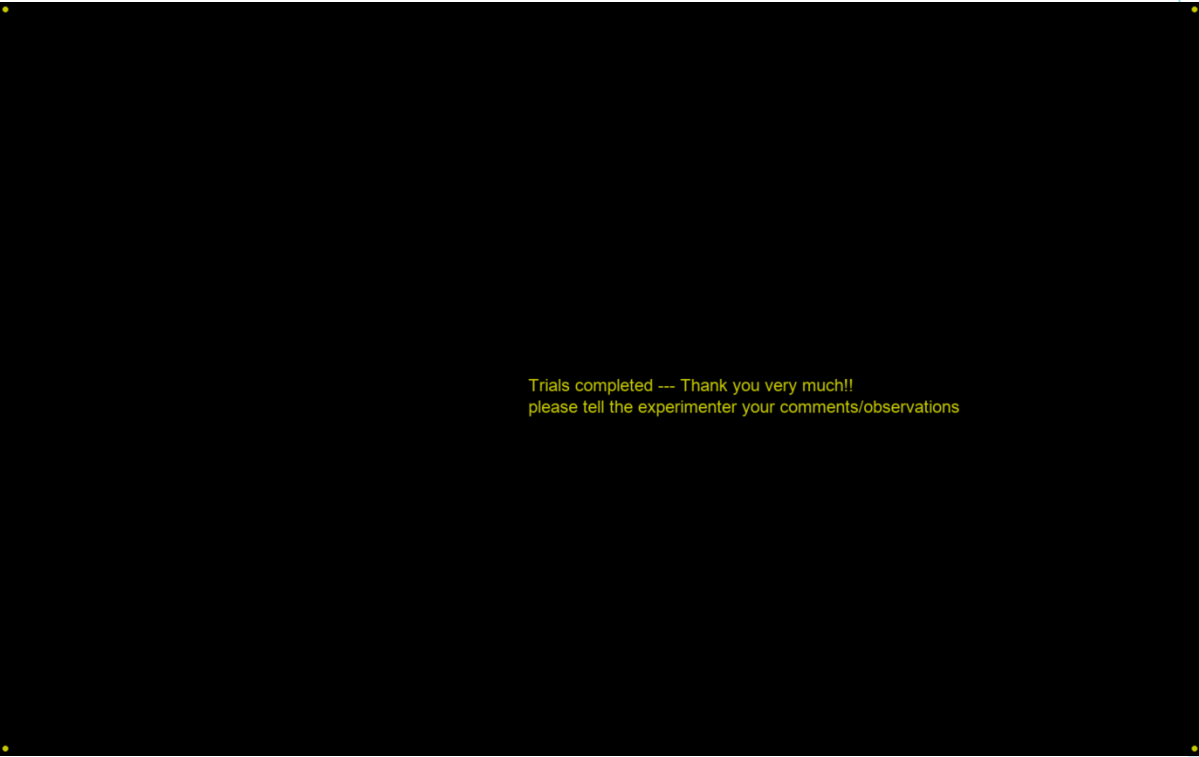
(record which condition this trial is, which key is pressed, and how long the reaction time is.)

4. Wait for 700 ms



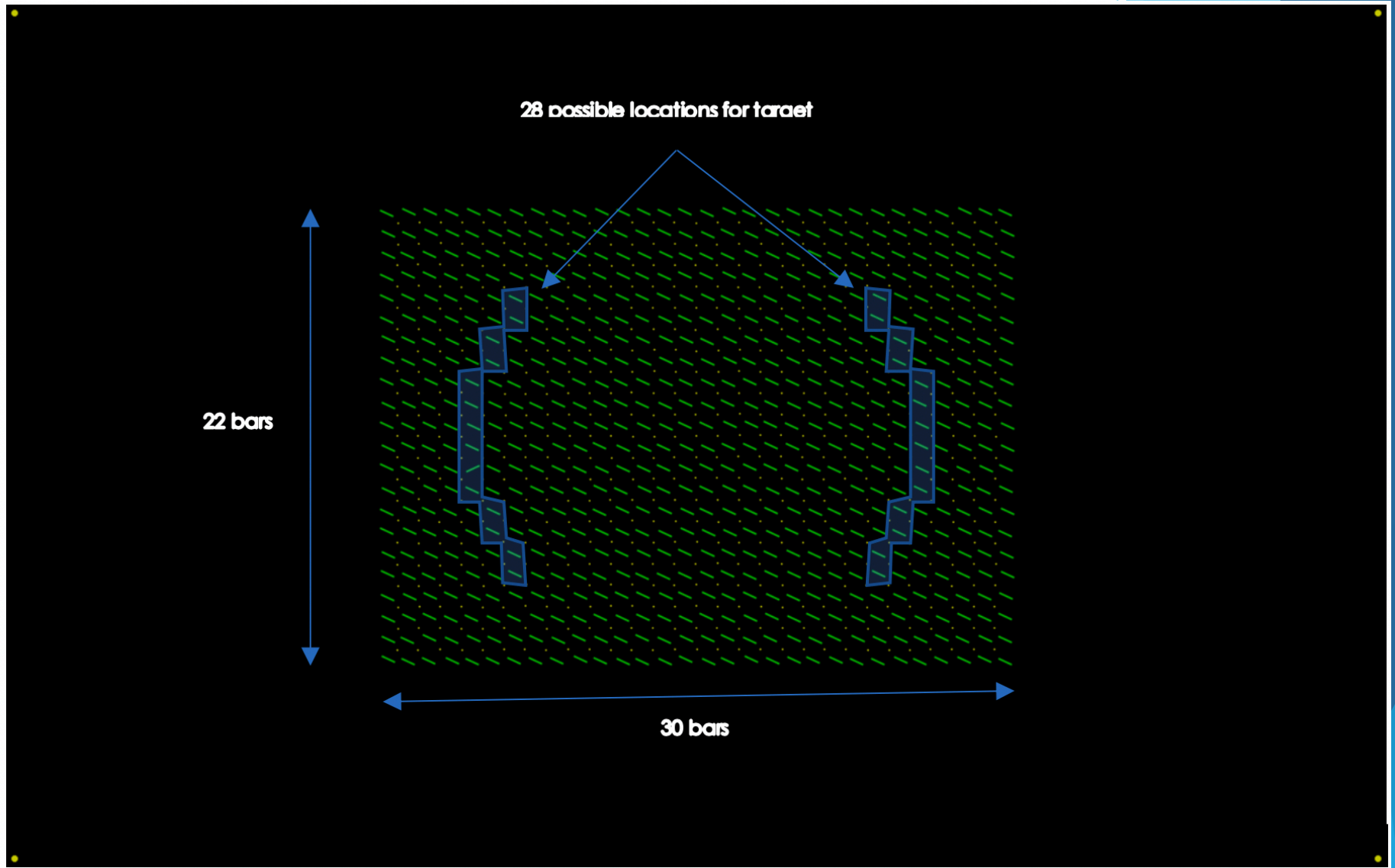
5. Repeat 1-4 for #trials

6. Exit program until key press



Trials completed --- Thank you very much!!
please tell the experimenter your comments/observations

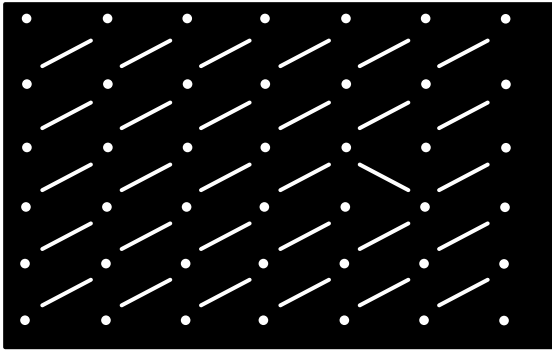
Stimulus conditions



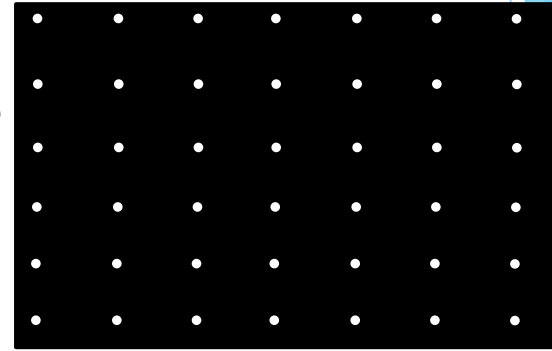
Conditions in this session:

1) M: All bars are presented in the same eye only (either left or right eye).

Left eye

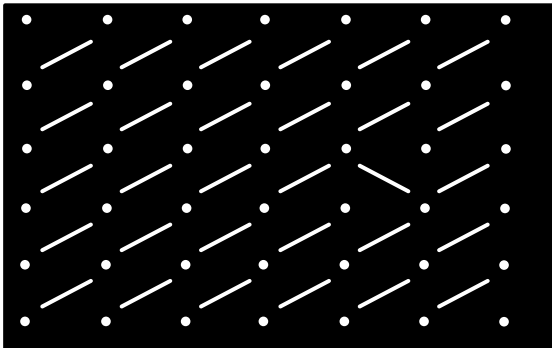


Right eye

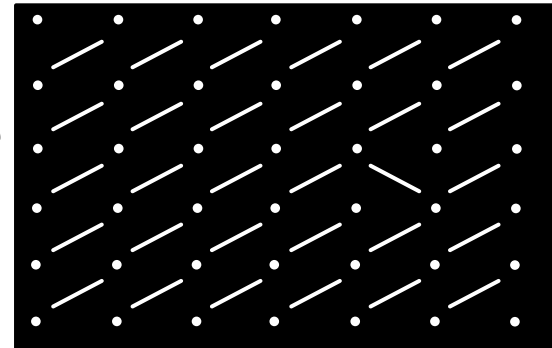


2) B: All bars are presented identically to both eyes.

Left eye

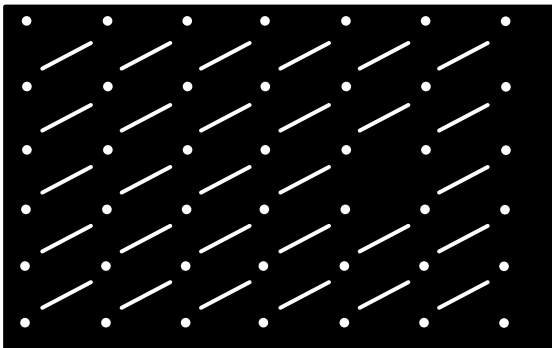


Right eye

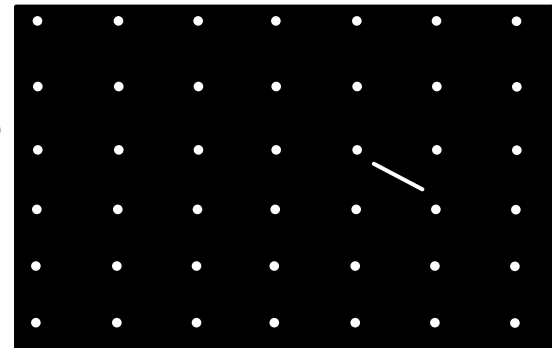


3) DC: Target is both orientation and ocular singleton

Left eye



Right eye



How to start

- 1) Learn from demos (structures and functions).
- 2) Start from one demo script.
- 3) Useful functions.
 - Show help of a certain function xxxx: “help xxxx” or “doc xxxx”
 - Type Screen(‘xxxx?’) to show help for Screen sub-function xxxx