**PSY310 Lab in Psychology**

**Lab report**

**Tutorial - 1**

**By Anshika Vijayvargiya**

**AU1920158**

**Introduction:**

A psychophysical technique developed by American cognitive scientist Tom Norman Corn sweet (born 1929), which involves repeatedly presenting a variable stimulus and adjusting it upward or downward depending on whether or not it is perceived. For difference thresholds, a variable stimulus is adjusted to increase its absolute difference from a standard stimulus whenever the difference is not discriminated, or to decrease it, depending on whether it is perceived. Also known as the up-and-down approach. It is used to compare the methods of limitations, constant stimuli, and average error. This psychophysical technique known variously as the "method of upstairs-method, the Bekesy audiometric method, or the ups and downs method, has been widely employed in recent years, and it offers a number of advantages over other, more widely used procedures, but it also has significant drawbacks. The staircase-method is best described by illustrating its use with a specific problem.

The staircase approach is one of the unconventional ways to measure participants' perception in stimulus detection and difference detection exams. The staircase approach is incredibly effective for following the temporal trajectory of threshold changes when they occur gradually.

The alternative methods to find stimulus threshold includes

1) [Method of constant stimuli](https://dictionary.apa.org/method-of-constant-stimuli)

A psychophysical method that involves randomly presenting many stimuli that are thought to be near to the sensory threshold in order to determine it. The stimulus value that was recognised 50% of the time is the threshold. Also known as the continual stimulus method and the right-and-wrong-cases approach.

2) Method of limits

A psychophysical method that measures the sensory threshold by incrementally raising or lowering the stimulus's intensity over time. In other words, a participant is shown a stimulus of a certain intensity; if it is perceived, a stimulus of a lower intensity is shown on the following trial, and so on, until the stimulus can no longer be recognised. When a stimulus is not perceived, a greater intensity stimulus is provided until it is. The average of the stimulus levels at which a detection-response transition occurs is the threshold (from yes to no, or vice versa). The participant can change a stimulus constantly using an alternate process called the method of constant adjustment until it can no longer be perceived.

**Method:**

The experiment was conducted in psychopy.

* The design of experiment started with stimuli polygon with basic name fixation. The start and stop duration is 1.0 sec and the shape is cross
* Stimuli grating had basic – time: 2.0, duration: 0.3 the Layout – size: (0.1, 0.1), position: $location (select – set every repeat) and appearance – contrast: level (select – set every repeat). The texture was – mask: circle, spatial frequency: 5
* The response was of keyboard and start duration is 2.0, allowed keys: ‘left’, ‘right’. The data (tick store correct) correct answer: $corrAns.
* The custom code is
* (In begin experiment)

if random()>0.5: # 50:50 probability

location = (-0.2, 0)

corrAns = 'left'

else:

location = (0.2,0)

corrAns = 'right'

* (In End routine)  
  thisExp.addData('key\_resp.corr', key\_resp.corr)

if random()>0.5: # 50:50 probability

location = (-0.2, 0)

corrAns = 'left'

else:

location = (0.2,0)

corrAns = 'right'

* We created excel sheet for parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| label | startVal | stepSizes | maxVal | minVal |
| cont | 0.05 | [0.01,0.01,0.005,0.005] | 1 | 0 |

* The flow of insert loop is

LoopType: interleaved straicases, nRep: 100, condition: (attach the excel file)

* We used an adaptive staircase approach to determine a visual grating's threshold contrast and carried out a detection operation that provided information about the spot where the grating occurred. The centre fixation's left or right side might both have gratings. A starting contrast value of 0.05 was used in 100 trials of the staircase process. Open the data file after the experiment to examine how the contrast value varied during the trials. Plotted the data with the trial number on the x-axis and the contrast value (column with the name trials. Intensity) in the y-axis. Made a new plot with trial number on the x-axis and accuracy on the y-axis. These two storylines were contrasted.

**Results:**

Threshold value = 0.047524137

The trial number had decreased with number of trials.

Trial number and keyresp corr graph

There is only 2 0 key-resp.corr.

**Discussion:**

When using the staircase approach, the participant is very conscious of the sequencing of the stimuli. Despite his initial ignorance, he rapidly becomes aware of the procedure. When the judgments are basic, this information isn't uncomfortable; nevertheless, when the judgments are complicated, as they are in almost every psychophysical research, it becomes distressing.