

## **CLAIMS:**

1. A processor-implemented method comprising:
  - partitioning a display area of a digitized digit symbol substitution test (DSST) device into multiple bins based on distance and degree from a center position of the display area;
  - displaying a series of number symbol pairs as a lookup table on top of the display, termed as a lookup area;
  - displaying a question and answer (QA) pair corresponding to the series of number symbol pairs to an examinee in multiple trials, wherein the location of the QA pair is changed in each of the multiple trials so that equal number of pairs are present in the multiple bins;
  - computing feature values for the QA pair in each of the multiple bins in the multiple trials, wherein the feature values comprise a response time and an accuracy of response by the examinee;
  - determining probabilities of the feature values in each of the multiple bins;
  - and
  - computing an entropy value based on the probabilities of the feature values in each of the multiple bins, wherein the entropy value provides information on distribution of the feature values in the display area.
2. The method as claimed in claim 1, wherein partitioning the display area of the digitized DSST device into the multiple bins based on distance and degree from the center position of the display area, comprises:
  - around the center position of the display area, partitioning 360 degree into a first set of the multiple bins; and
  - partitioning distance from the center position into remaining set of the multiple bins using concentric circles.
3. The method as claimed in claim 1, wherein computing the feature values for the QA pair in each of the multiple bins in the multiple trials, wherein the feature values comprise the response time and accuracy of response by the

examinee, comprises:

enabling the examinee to provide input for the QA pair in each of the multiple bins in each of the multiple trials through a spacebar in the digitized DSST system; and

computing the feature values for the QA pair in each of the multiple bins in the multiple trials upon receiving the input from the examinee for the QA pair in each of the multiple bins in each of the multiple trials.

4. The method as claimed in claim 1, wherein determining the probabilities of the feature values in each of the multiple bins, comprises:

determining an average of the feature values in each of the multiple bins; and

determining the probabilities of the average of the feature values in each of the multiple bins.

5. The method as claimed in claim 1, wherein determining the probabilities of the feature values in each of the multiple bins, comprises:

determining the probabilities of the feature values in each of the multiple bins using normalization.

6. The method as claimed in claim 1, wherein the entropy value is maximum when the distribution of the feature values in the display area is probable and wherein the entropy value is minimum when the distribution of the feature values in the lookup area is not probable.

7. The method as claimed in claim 1, further comprising:

computing a length of a path traversed by eyes of the examinee from a QA pair to a target location in the lookup area in one of the multiple trials; and

analyzing speed of processing of the examinee in the one of the multiple trials based on the length of the path traversed by eyes of the examinee from the QA pair to the target location in the lookup area and a length of shortest path between the QA pair and the target location in the lookup area.

8. The method as claimed in claim 7, wherein the target location in the lookup table is termed as the number symbol pair in the lookup table for which the number matches with the number of the number symbol pair of the QA.
9. A system comprising:  
a digitized digit symbol substitution test (DSST) device, wherein the DSST device comprises:  
one or more memories; and  
one or more hardware processors, the one or more memories coupled to the one or more hardware processors, wherein the one or more hardware processors are capable of executing programmed instructions stored in the one or more memories to:  
partition a display area in the DSST device into multiple bins based on distance and degree from a center position of the display area;  
display a series of number symbol pairs as a lookup table on top of the display, termed as a lookup area;  
display a question and answer (QA) pair corresponding to the series of number symbol pairs to an examinee in multiple trials, wherein the location of the QA pair is changed in each of the multiple trials so that equal number of pairs are present in the multiple bins;  
compute feature values for the QA pair in each of the multiple bins in the multiple trials, wherein the feature values comprise a response time and an accuracy of response by the examinee;  
determine probabilities of the feature values in each of the multiple bins; and  
compute an entropy value based on the probabilities of the feature values in each of the multiple bins, wherein the entropy value provides information on distribution of the feature values in the display area.
10. The system as claimed in claim 9, wherein one or more hardware processors are capable of executing programmed instructions to:

around the center position of the display area, partition 360 degree into a first set of the multiple bins; and

partition distance from the center position into remaining set of the multiple bins using concentric circles.

11. The system as claimed in claim 9, wherein one or more hardware processors are capable of executing programmed instructions to:

enable the examinee to provide input for the QA pair in each of the multiple bins in each of the multiple trials through a spacebar in the digitized DSST system; and

compute the feature values for the QA pair in each of the multiple bins in the multiple trials upon receiving the input from the examinee for the QA pair in each of the multiple bins in each of the multiple trials.

12. The system as claimed in claim 9, wherein one or more hardware processors are capable of executing programmed instructions to:

determine an average of the feature values in each of the multiple bins; and

determine the probabilities of the average of the feature values in each of the multiple bins.

13. The system as claimed in claim 9, wherein one or more hardware processors are capable of executing programmed instructions to:

determine the probabilities of the feature values in each of the multiple bins using normalization.

14. The system as claimed in claim 9, wherein the entropy value is maximum when the distribution of the feature values in the display area is probable and wherein the entropy value is minimum when the distribution of the feature values in the display area is not probable.

15. The system as claimed in claim 9, wherein one or more hardware processors are further capable of executing programmed instructions to:

compute a length of a path traversed by eyes of the examinee from a QA pair to a target location in the lookup area in one of the multiple trials; and

analyze speed of processing of the examinee in the one of the multiple trials based on the length of the path traversed by eyes of the examinee from the QA pair to the target location in the lookup area and a length of shortest path between the QA pair and the target location in the lookup area.

16. The system as claimed in claim 15, wherein the target location in the lookup table is termed as the number symbol pair in the lookup table for which the number matches with the number of the number symbol pair of the QA.