



2BZ PRESENTATION



Benedict, Bryan, Zhi Kai



PROBLEM

Websites that include features with high overheads are prone to Dos/DDoS-ing. As such, we aim to reduce such occurrences by disconnecting malicious actors who managed to bypass primary bot detectors.



HOW?

- Keep track of some user metrics while they are on the website
 - Average cursor speed
 - Average cursor accuracy (how close the user clicked was to the centre of the button)
 - Time To First Action (TTFA)
- Store these metrics in a hash table by user, which will be cleared periodically
 - Most recent entries within 1 hour will be kept
- During times of high traffic, program will boot up
 - Tabulates the statistics of all users for each metric and forms a trend and standard deviation from it
 - If SD is sufficiently small, users with metrics found to be of a similar trend will be flagged as potential bots and disconnected from the web
- Not a standalone solution to identify malicious actors
 - To be used in conjunction with other known methods to combat botting



DEMO

```
3480
3481     "HUMAN_147": {
3482         "total_sessions": 17,
3483         "speed_sum": 6.12334445605545,
3484         "accuracy_dev_sum": 68.36688178505824,
3485         "ttfa_ms_sum": 81474.69928459426,
3486         "last_updated": "2025-12-06T15:12:31.273850+00:00"
3487     },
3488     "HUMAN_148": {
3489         "total_sessions": 44,
3490         "speed_sum": 16.39264387652759,
3491         "accuracy_dev_sum": 171.34739352369985,
3492         "ttfa_ms_sum": 96782.42964803202,
3493         "last_updated": "2025-12-06T15:12:31.273852+00:00"
3494     },
3495     "HUMAN_149": {
3496         "total_sessions": 38,
3497         "speed_sum": 18.32371910423043,
3498         "accuracy_dev_sum": 101.42396070777001,
3499         "ttfa_ms_sum": 132976.1746809717,
3500         "last_updated": "2025-12-06T15:12:31.273855+00:00"
3501     },
3502     "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/
3503         "total_sessions": 43,
3504         "speed_sum": 16.987572646624596,
3505         "accuracy_dev_sum": 11.040299999999998,
3506         "ttfa_ms_sum": 29014.0,
3507         "last_updated": "2025-12-06T15:43:34.008855+00:00"
3508     }
3509 }
```

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Unbelievable Chicken



LIMITATIONS

- Metrics currently used may not be sufficient to determine whether the user is actually not a human
 - A user could happen to fall within the SD by chance and get kicked
 - More metrics could increase the likelihood that a user who falls within the SD is a bot
- Determination of how sufficiently small SD should be is subjective
 - Too small, and more bots will be let through
 - Too big, and real users are more likely to be kicked
 - More research is required to accurately determine the value of SD for each metric
- Effective if website has many possible actions
 - Websites with few possible actions are hard to detect anomalous behaviour from
 - May result in many false positives
 - Not suggested to implement on such websites

THANK YOU :)