Revised Title:

"Intelligent Automation in Human-Computer Interaction: A Data-Driven Exploration concerning 2DM games"

(see Annex: first game – first log-data)

Next steps:

* IF we exactly know data about each accepted mouse-activities (see annex)
* AND such kind of log-data can be derived for a lot of different persons
* THEN we can build models for estimating a kind of HCI-index or HCI-simulator
* OAM: object are persons and games (one person may play the same game frequently in the testing phase) / attributes should be defined based on the annex (below)
* Persons must be characterized through a lot of descriptive parameters (like sex, age, etc.)
* QUESTION: which kind of personalities (characterized through descriptive parameters) which level of HCI-index will achieve
* HCI-index: can we evaluate each person with the same HCI index-value based on a lot of log-data coming from the 2dm-games?

Operative first step:

* Defining attributes based on the log-data in annex for a HCI-index
* It means that we have to reduce the number of the raw log-data based on simple/tricky calculations like total time of a game, etc.
* An attribute is correct, if we can make a statement: THE LESS is the total playing time THE HIGHER can be set the HCI-index – because: a good visualization (game-screenshot) might not lead to long games and vice-versa
* WE DO NEED A LOT OF ATTRIBUTE BASED ON THE DEMO ABOVE!

Revised Abstract:

In the rapidly evolving landscape of computer science, this thesis aims to explore the specific challenges in Human-Computer Interaction (HCI) by integrating Artificial Intelligence (AI), automation, and data science.

The primary objective is to enhance both user experience and system efficiency through the application of intelligent automation and data-driven methodologies.

The research will address key problems, including seamless interaction between humans and intelligent systems, optimization of user interfaces based on data analytics, and the ethical and responsible use of AI technologies.

Revised Goals:

Investigate specific challenges in HCI related to the integration of AI, automation, and data science.

Develop precise algorithms for intelligent automation to streamline user interactions and improve overall system performance.

Revised Tasks:

Conduct a literature review to identify and highlight specific research gaps and challenges in HCI, AI, automation, and data science.

Develop algorithms for intelligent automation, taking into account factors such as user context, preferences, and system requirements.

Data Science Techniques:

Specify whether real user behavior data is available and, if so, provide details on the source and nature of the data. If not, outline plans for obtaining and analyzing relevant data.

Targeted Groups and Benefits:

Clearly outline how the research findings will specifically benefit HCI practitioners, AI developers, data scientists, and users in practical scenarios.

Annex: First game – first log-data

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| element | sourceX | sourceY | sourceW | sourceH | targetX | targetY | targetW | targetH |
| COLOR\_GREEN-DOT\_2 | 752 | 127 | 122 | 122 | 377 | 368 | 136 | 136 |
| COLOR\_BROWN-DOT\_2 | 935 | 127 | 122 | 122 | 377 | 230 | 136 | 136 |
| COLOR\_GREEN-DOT\_1 | 1118 | 127 | 122 | 122 | 239 | 368 | 136 | 136 |
| COLOR\_BROWN-DOT\_1 | 752 | 310 | 122 | 122 | 239 | 230 | 136 | 136 |
| COLOR\_BLUE-DOT\_3 | 935 | 310 | 122 | 122 | 515 | 506 | 136 | 136 |
| COLOR\_GREEN-DOT\_3 | 1118 | 310 | 122 | 122 | 515 | 368 | 136 | 136 |
| COLOR\_BLUE-DOT\_1 | 752 | 493 | 122 | 122 | 239 | 506 | 136 | 136 |
| COLOR\_BLUE-DOT\_2 | 935 | 493 | 122 | 122 | 377 | 506 | 136 | 136 |
| COLOR\_BROWN-DOT\_3 | 1118 | 493 | 122 | 122 | 515 | 230 | 136 | 136 |
|  |  |  |  |  |  |  |  |  |
| time | event | element | x | y | game |  |  |  |
| 0 | START | ALL | 0 | 0 | COLOR\_DOT | |  |  |
| 4707 | pointerdown | COLOR\_BROWN-DOT\_2 | 923.3334 | 120.6667 | COLOR\_DOT | |  |  |
| 4874 | pointermove | COLOR\_BROWN-DOT\_2 | 919.3334 | 124 | COLOR\_DOT | |  |  |
| 4888 | pointermove | COLOR\_BROWN-DOT\_2 | 903.3334 | 135.3333 | COLOR\_DOT | |  |  |
| 4909 | pointermove | COLOR\_BROWN-DOT\_2 | 874 | 153.3333 | COLOR\_DOT | |  |  |
| 4923 | pointermove | COLOR\_BROWN-DOT\_2 | 852.6667 | 166.6667 | COLOR\_DOT | |  |  |
| 4944 | pointermove | COLOR\_BROWN-DOT\_2 | 820.6667 | 185.3333 | COLOR\_DOT | |  |  |
| 4958 | pointermove | COLOR\_BROWN-DOT\_2 | 798.6667 | 195.3333 | COLOR\_DOT | |  |  |
| 4972 | pointermove | COLOR\_BROWN-DOT\_2 | 776.6667 | 202.6667 | COLOR\_DOT | |  |  |
| 4993 | pointermove | COLOR\_BROWN-DOT\_2 | 742.6667 | 212 | COLOR\_DOT | |  |  |
| 5007 | pointermove | COLOR\_BROWN-DOT\_2 | 718.6667 | 216 | COLOR\_DOT | |  |  |
| 5028 | pointermove | COLOR\_BROWN-DOT\_2 | 682 | 224 | COLOR\_DOT | |  |  |
| 5042 | pointermove | COLOR\_BROWN-DOT\_2 | 662.6667 | 226.6667 | COLOR\_DOT | |  |  |
| 5056 | pointermove | COLOR\_BROWN-DOT\_2 | 644 | 229.3333 | COLOR\_DOT | |  |  |
| 5077 | pointermove | COLOR\_BROWN-DOT\_2 | 618 | 232 | COLOR\_DOT | |  |  |
| 5091 | pointermove | COLOR\_BROWN-DOT\_2 | 604.6667 | 234 | COLOR\_DOT | |  |  |
| 5105 | pointermove | COLOR\_BROWN-DOT\_2 | 592 | 234 | COLOR\_DOT | |  |  |
| 5126 | pointermove | COLOR\_BROWN-DOT\_2 | 569.3334 | 235.3333 | COLOR\_DOT | |  |  |
| 5140 | pointermove | COLOR\_BROWN-DOT\_2 | 550.6667 | 235.3333 | COLOR\_DOT | |  |  |
| 5161 | pointermove | COLOR\_BROWN-DOT\_2 | 522.6667 | 234.6667 | COLOR\_DOT | |  |  |
| 5175 | pointermove | COLOR\_BROWN-DOT\_2 | 505.3333 | 234 | COLOR\_DOT | |  |  |
| 5189 | pointermove | COLOR\_BROWN-DOT\_2 | 489.3333 | 232.6667 | COLOR\_DOT | |  |  |
| 5210 | pointermove | COLOR\_BROWN-DOT\_2 | 470.6667 | 230 | COLOR\_DOT | |  |  |
| 5224 | pointermove | COLOR\_BROWN-DOT\_2 | 462.6667 | 229.3333 | COLOR\_DOT | |  |  |
| 5238 | pointermove | COLOR\_BROWN-DOT\_2 | 454.6667 | 226.6667 | COLOR\_DOT | |  |  |
| 5259 | pointermove | COLOR\_BROWN-DOT\_2 | 448 | 224 | COLOR\_DOT | |  |  |
| 5273 | pointermove | COLOR\_BROWN-DOT\_2 | 444.6667 | 222 | COLOR\_DOT | |  |  |
| 5294 | pointermove | COLOR\_BROWN-DOT\_2 | 440 | 220 | COLOR\_DOT | |  |  |
| 5308 | pointermove | COLOR\_BROWN-DOT\_2 | 436 | 218 | COLOR\_DOT | |  |  |
| 5322 | pointermove | COLOR\_BROWN-DOT\_2 | 431.3333 | 215.3333 | COLOR\_DOT | |  |  |
| 5343 | pointermove | COLOR\_BROWN-DOT\_2 | 423.3333 | 212.6667 | COLOR\_DOT | |  |  |
| 5357 | pointermove | COLOR\_BROWN-DOT\_2 | 416 | 210.6667 | COLOR\_DOT | |  |  |
| 5371 | pointermove | COLOR\_BROWN-DOT\_2 | 410 | 210.6667 | COLOR\_DOT | |  |  |
| 5392 | pointermove | COLOR\_BROWN-DOT\_2 | 400.6667 | 212 | COLOR\_DOT | |  |  |
| 5406 | pointermove | COLOR\_BROWN-DOT\_2 | 394.6667 | 213.3333 | COLOR\_DOT | |  |  |
| 5427 | pointermove | COLOR\_BROWN-DOT\_2 | 388.6667 | 214.6667 | COLOR\_DOT | |  |  |
| 5440 | pointermove | COLOR\_BROWN-DOT\_2 | 384.6667 | 216 | COLOR\_DOT | |  |  |
| 5455 | pointermove | COLOR\_BROWN-DOT\_2 | 380 | 216.6667 | COLOR\_DOT | |  |  |
| 5475 | pointermove | COLOR\_BROWN-DOT\_2 | 375.3333 | 216.6667 | COLOR\_DOT | |  |  |
| 5490 | pointermove | COLOR\_BROWN-DOT\_2 | 373.3333 | 216.6667 | COLOR\_DOT | |  |  |
| 5503 | pointermove | COLOR\_BROWN-DOT\_2 | 372 | 216 | COLOR\_DOT | |  |  |
| 5524 | pointermove | COLOR\_BROWN-DOT\_2 | 370.6667 | 215.3333 | COLOR\_DOT | |  |  |
| 5538 | pointermove | COLOR\_BROWN-DOT\_2 | 369.3333 | 214.6667 | COLOR\_DOT | |  |  |
| 5552 | pointermove | COLOR\_BROWN-DOT\_2 | 368.6667 | 214 | COLOR\_DOT | |  |  |
| 5580 | pointermove | COLOR\_BROWN-DOT\_2 | 368 | 214 | COLOR\_DOT | |  |  |
| 6056 | pointerup | COLOR\_BROWN-DOT\_2 | 368 | 214 | COLOR\_DOT | |  |  |
| 8344 | pointerdown | COLOR\_BROWN-DOT\_3 | 1120.667 | 476 | COLOR\_DOT | |  |  |
| 8469 | pointermove | COLOR\_BROWN-DOT\_3 | 1119.333 | 476 | COLOR\_DOT | |  |  |
| 8490 | pointermove | COLOR\_BROWN-DOT\_3 | 1112.667 | 476 | COLOR\_DOT | |  |  |
| 8504 | pointermove | COLOR\_BROWN-DOT\_3 | 1093.333 | 482.6667 | COLOR\_DOT | |  |  |
| 8525 | pointermove | COLOR\_BROWN-DOT\_3 | 1007.333 | 477.3334 | COLOR\_DOT | |  |  |
| 8539 | pointermove | COLOR\_BROWN-DOT\_3 | 934.6667 | 458 | COLOR\_DOT | |  |  |
| 8553 | pointermove | COLOR\_BROWN-DOT\_3 | 854.6667 | 428 | COLOR\_DOT | |  |  |
| 8574 | pointermove | COLOR\_BROWN-DOT\_3 | 730 | 379.3333 | COLOR\_DOT | |  |  |
| 8588 | pointermove | COLOR\_BROWN-DOT\_3 | 657.3334 | 346 | COLOR\_DOT | |  |  |
| 8602 | pointermove | COLOR\_BROWN-DOT\_3 | 600 | 317.3333 | COLOR\_DOT | |  |  |
| 8623 | pointermove | COLOR\_BROWN-DOT\_3 | 536 | 281.3333 | COLOR\_DOT | |  |  |
| 8637 | pointermove | COLOR\_BROWN-DOT\_3 | 510 | 265.3333 | COLOR\_DOT | |  |  |
| 8658 | pointermove | COLOR\_BROWN-DOT\_3 | 479.3333 | 251.3333 | COLOR\_DOT | |  |  |
| 8672 | pointermove | COLOR\_BROWN-DOT\_3 | 468.6667 | 245.3333 | COLOR\_DOT | |  |  |
| 8686 | pointermove | COLOR\_BROWN-DOT\_3 | 462 | 242 | COLOR\_DOT | |  |  |
| 8707 | pointermove | COLOR\_BROWN-DOT\_3 | 456 | 238 | COLOR\_DOT | |  |  |
| 8721 | pointermove | COLOR\_BROWN-DOT\_3 | 452 | 233.3333 | COLOR\_DOT | |  |  |
| 8742 | pointermove | COLOR\_BROWN-DOT\_3 | 444 | 220 | COLOR\_DOT | |  |  |
| 8756 | pointermove | COLOR\_BROWN-DOT\_3 | 439.3333 | 208.6667 | COLOR\_DOT | |  |  |
| 8770 | pointermove | COLOR\_BROWN-DOT\_3 | 435.3333 | 199.3333 | COLOR\_DOT | |  |  |
| 8791 | pointermove | COLOR\_BROWN-DOT\_3 | 433.3333 | 192.6667 | COLOR\_DOT | |  |  |
| 8805 | pointermove | COLOR\_BROWN-DOT\_3 | 432.6667 | 191.3333 | COLOR\_DOT | |  |  |
| 8819 | pointermove | COLOR\_BROWN-DOT\_3 | 432.6667 | 190.6667 | COLOR\_DOT | |  |  |
| 8833 | pointermove | COLOR\_BROWN-DOT\_3 | 432.6667 | 190 | COLOR\_DOT | |  |  |
| 8855 | pointermove | COLOR\_BROWN-DOT\_3 | 436 | 188.6667 | COLOR\_DOT | |  |  |
| 8874 | pointermove | COLOR\_BROWN-DOT\_3 | 444.6667 | 186 | COLOR\_DOT | |  |  |
| 8889 | pointermove | COLOR\_BROWN-DOT\_3 | 450.6667 | 185.3333 | COLOR\_DOT | |  |  |
| 8903 | pointermove | COLOR\_BROWN-DOT\_3 | 456.6667 | 185.3333 | COLOR\_DOT | |  |  |
| 8924 | pointermove | COLOR\_BROWN-DOT\_3 | 464 | 185.3333 | COLOR\_DOT | |  |  |
| 8938 | pointermove | COLOR\_BROWN-DOT\_3 | 467.3333 | 185.3333 | COLOR\_DOT | |  |  |
| 8952 | pointermove | COLOR\_BROWN-DOT\_3 | 470 | 186 | COLOR\_DOT | |  |  |
| 8973 | pointermove | COLOR\_BROWN-DOT\_3 | 474 | 186.6667 | COLOR\_DOT | |  |  |
| 8987 | pointermove | COLOR\_BROWN-DOT\_3 | 474.6667 | 187.3333 | COLOR\_DOT | |  |  |
| 9007 | pointermove | COLOR\_BROWN-DOT\_3 | 477.3333 | 188 | COLOR\_DOT | |  |  |
| 9021 | pointermove | COLOR\_BROWN-DOT\_3 | 479.3333 | 188.6667 | COLOR\_DOT | |  |  |
| 9035 | pointermove | COLOR\_BROWN-DOT\_3 | 480.6667 | 190 | COLOR\_DOT | |  |  |
| 9056 | pointermove | COLOR\_BROWN-DOT\_3 | 484 | 191.3333 | COLOR\_DOT | |  |  |
| 9070 | pointermove | COLOR\_BROWN-DOT\_3 | 486 | 192 | COLOR\_DOT | |  |  |
| 9084 | pointermove | COLOR\_BROWN-DOT\_3 | 488 | 193.3333 | COLOR\_DOT | |  |  |
| 9106 | pointermove | COLOR\_BROWN-DOT\_3 | 489.3333 | 194 | COLOR\_DOT | |  |  |
| 9119 | pointermove | COLOR\_BROWN-DOT\_3 | 490.6667 | 194.6667 | COLOR\_DOT | |  |  |
| 9133 | pointermove | COLOR\_BROWN-DOT\_3 | 492 | 195.3333 | COLOR\_DOT | |  |  |
| 9147 | pointermove | COLOR\_BROWN-DOT\_3 | 492.6667 | 196 | COLOR\_DOT | |  |  |
| 9189 | pointermove | COLOR\_BROWN-DOT\_3 | 494 | 196.6667 | COLOR\_DOT | |  |  |
| 9203 | pointermove | COLOR\_BROWN-DOT\_3 | 494.6667 | 198 | COLOR\_DOT | |  |  |
| 9218 | pointerup | COLOR\_BROWN-DOT\_3 | 494.6667 | 198 | COLOR\_DOT | |  |  |
| 9973 | pointerdown | COLOR\_BROWN-DOT\_1 | 774 | 310 | COLOR\_DOT | |  |  |
| 10127 | pointermove | COLOR\_BROWN-DOT\_1 | 764.6667 | 314 | COLOR\_DOT | |  |  |
| 10141 | pointermove | COLOR\_BROWN-DOT\_1 | 734.6667 | 323.3333 | COLOR\_DOT | |  |  |
| 10154 | pointermove | COLOR\_BROWN-DOT\_1 | 700 | 331.3333 | COLOR\_DOT | |  |  |
| 10169 | pointermove | COLOR\_BROWN-DOT\_1 | 668 | 332.6667 | COLOR\_DOT | |  |  |
| 10190 | pointermove | COLOR\_BROWN-DOT\_1 | 615.3334 | 326.6667 | COLOR\_DOT | |  |  |
| 10204 | pointermove | COLOR\_BROWN-DOT\_1 | 572 | 314.6667 | COLOR\_DOT | |  |  |
| 10218 | pointermove | COLOR\_BROWN-DOT\_1 | 520.6667 | 300.6667 | COLOR\_DOT | |  |  |
| 10239 | pointermove | COLOR\_BROWN-DOT\_1 | 449.3333 | 280 | COLOR\_DOT | |  |  |
| 10252 | pointermove | COLOR\_BROWN-DOT\_1 | 416.6667 | 269.3333 | COLOR\_DOT | |  |  |
| 10273 | pointermove | COLOR\_BROWN-DOT\_1 | 387.3333 | 256.6667 | COLOR\_DOT | |  |  |
| 10287 | pointermove | COLOR\_BROWN-DOT\_1 | 372.6667 | 251.3333 | COLOR\_DOT | |  |  |
| 10302 | pointermove | COLOR\_BROWN-DOT\_1 | 360 | 248.6667 | COLOR\_DOT | |  |  |
| 10322 | pointermove | COLOR\_BROWN-DOT\_1 | 343.3333 | 244.6667 | COLOR\_DOT | |  |  |
| 10336 | pointermove | COLOR\_BROWN-DOT\_1 | 335.3333 | 244.6667 | COLOR\_DOT | |  |  |
| 10350 | pointermove | COLOR\_BROWN-DOT\_1 | 326.6667 | 242.6667 | COLOR\_DOT | |  |  |
| 10371 | pointermove | COLOR\_BROWN-DOT\_1 | 318.6667 | 241.3333 | COLOR\_DOT | |  |  |
| 10385 | pointermove | COLOR\_BROWN-DOT\_1 | 315.3333 | 239.3333 | COLOR\_DOT | |  |  |
| 10406 | pointermove | COLOR\_BROWN-DOT\_1 | 309.3333 | 234.6667 | COLOR\_DOT | |  |  |
| 10420 | pointermove | COLOR\_BROWN-DOT\_1 | 304.6667 | 232 | COLOR\_DOT | |  |  |
| 10434 | pointermove | COLOR\_BROWN-DOT\_1 | 300.6667 | 229.3333 | COLOR\_DOT | |  |  |
| 10455 | pointermove | COLOR\_BROWN-DOT\_1 | 294 | 228 | COLOR\_DOT | |  |  |
| 10469 | pointermove | COLOR\_BROWN-DOT\_1 | 291.3333 | 227.3333 | COLOR\_DOT | |  |  |
| 10490 | pointermove | COLOR\_BROWN-DOT\_1 | 289.3333 | 226.6667 | COLOR\_DOT | |  |  |
| 10497 | pointermove | COLOR\_BROWN-DOT\_1 | 288.6667 | 226.6667 | COLOR\_DOT | |  |  |
| 10511 | pointermove | COLOR\_BROWN-DOT\_1 | 288 | 226.6667 | COLOR\_DOT | |  |  |
| 10560 | pointermove | COLOR\_BROWN-DOT\_1 | 288 | 227.3333 | COLOR\_DOT | |  |  |
| 10581 | pointermove | COLOR\_BROWN-DOT\_1 | 288 | 228 | COLOR\_DOT | |  |  |
| 10609 | pointermove | COLOR\_BROWN-DOT\_1 | 288 | 228.6667 | COLOR\_DOT | |  |  |
| 10693 | pointerup | COLOR\_BROWN-DOT\_1 | 288 | 228.6667 | COLOR\_DOT | |  |  |
| 11876 | pointerdown | COLOR\_GREEN-DOT\_2 | 720 | 129.3333 | COLOR\_DOT | |  |  |
| 12036 | pointermove | COLOR\_GREEN-DOT\_2 | 710 | 144.6667 | COLOR\_DOT | |  |  |
| 12050 | pointermove | COLOR\_GREEN-DOT\_2 | 674 | 184.6667 | COLOR\_DOT | |  |  |
| 12071 | pointermove | COLOR\_GREEN-DOT\_2 | 630.6667 | 226 | COLOR\_DOT | |  |  |
| 12085 | pointermove | COLOR\_GREEN-DOT\_2 | 606 | 248 | COLOR\_DOT | |  |  |
| 12099 | pointermove | COLOR\_GREEN-DOT\_2 | 577.3334 | 272 | COLOR\_DOT | |  |  |
| 12120 | pointermove | COLOR\_GREEN-DOT\_2 | 526.6667 | 308 | COLOR\_DOT | |  |  |
| 12134 | pointermove | COLOR\_GREEN-DOT\_2 | 497.3333 | 327.3333 | COLOR\_DOT | |  |  |
| 12155 | pointermove | COLOR\_GREEN-DOT\_2 | 462 | 352 | COLOR\_DOT | |  |  |
| 12169 | pointermove | COLOR\_GREEN-DOT\_2 | 442 | 364 | COLOR\_DOT | |  |  |
| 12183 | pointermove | COLOR\_GREEN-DOT\_2 | 428.6667 | 371.3333 | COLOR\_DOT | |  |  |
| 12204 | pointermove | COLOR\_GREEN-DOT\_2 | 421.3333 | 375.3333 | COLOR\_DOT | |  |  |
| 12218 | pointermove | COLOR\_GREEN-DOT\_2 | 418.6667 | 376.6667 | COLOR\_DOT | |  |  |
| 12232 | pointermove | COLOR\_GREEN-DOT\_2 | 416 | 377.3333 | COLOR\_DOT | |  |  |
| 12253 | pointermove | COLOR\_GREEN-DOT\_2 | 413.3333 | 378 | COLOR\_DOT | |  |  |
| 12267 | pointermove | COLOR\_GREEN-DOT\_2 | 412 | 378 | COLOR\_DOT | |  |  |
| 12288 | pointermove | COLOR\_GREEN-DOT\_2 | 408.6667 | 378 | COLOR\_DOT | |  |  |
| 12302 | pointermove | COLOR\_GREEN-DOT\_2 | 406 | 378 | COLOR\_DOT | |  |  |
| 12316 | pointermove | COLOR\_GREEN-DOT\_2 | 403.3333 | 378.6667 | COLOR\_DOT | |  |  |
| 12337 | pointermove | COLOR\_GREEN-DOT\_2 | 400 | 378.6667 | COLOR\_DOT | |  |  |
| 12344 | pointermove | COLOR\_GREEN-DOT\_2 | 399.3333 | 378.6667 | COLOR\_DOT | |  |  |
| 12358 | pointermove | COLOR\_GREEN-DOT\_2 | 398.6667 | 378.6667 | COLOR\_DOT | |  |  |
| 12379 | pointermove | COLOR\_GREEN-DOT\_2 | 397.3333 | 378.6667 | COLOR\_DOT | |  |  |
| 12393 | pointermove | COLOR\_GREEN-DOT\_2 | 396.6667 | 378.6667 | COLOR\_DOT | |  |  |
| 12414 | pointermove | COLOR\_GREEN-DOT\_2 | 396 | 378.6667 | COLOR\_DOT | |  |  |
| 12428 | pointermove | COLOR\_GREEN-DOT\_2 | 395.3333 | 378.6667 | COLOR\_DOT | |  |  |
| 12449 | pointermove | COLOR\_GREEN-DOT\_2 | 393.3333 | 378.6667 | COLOR\_DOT | |  |  |
| 12470 | pointermove | COLOR\_GREEN-DOT\_2 | 386 | 380 | COLOR\_DOT | |  |  |
| 12484 | pointermove | COLOR\_GREEN-DOT\_2 | 378.6667 | 382 | COLOR\_DOT | |  |  |
| 12505 | pointermove | COLOR\_GREEN-DOT\_2 | 368 | 383.3333 | COLOR\_DOT | |  |  |
| 12519 | pointermove | COLOR\_GREEN-DOT\_2 | 365.3333 | 384 | COLOR\_DOT | |  |  |
| 12526 | pointermove | COLOR\_GREEN-DOT\_2 | 364 | 384 | COLOR\_DOT | |  |  |
| 12540 | pointermove | COLOR\_GREEN-DOT\_2 | 363.3333 | 384 | COLOR\_DOT | |  |  |
| 12568 | pointermove | COLOR\_GREEN-DOT\_2 | 362.6667 | 384 | COLOR\_DOT | |  |  |
| 12715 | pointerup | COLOR\_GREEN-DOT\_2 | 362.6667 | 384 | COLOR\_DOT | |  |  |
| 13498 | pointerdown | COLOR\_GREEN-DOT\_1 | 1127.333 | 104.6667 | COLOR\_DOT | |  |  |
| 13659 | pointermove | COLOR\_GREEN-DOT\_1 | 1107.333 | 112 | COLOR\_DOT | |  |  |
| 13666 | pointermove | COLOR\_GREEN-DOT\_1 | 1063.333 | 128.6667 | COLOR\_DOT | |  |  |
| 13687 | pointermove | COLOR\_GREEN-DOT\_1 | 924.6667 | 185.3333 | COLOR\_DOT | |  |  |
| 13700 | pointermove | COLOR\_GREEN-DOT\_1 | 828 | 224.6667 | COLOR\_DOT | |  |  |
| 13715 | pointermove | COLOR\_GREEN-DOT\_1 | 726.6667 | 262.6667 | COLOR\_DOT | |  |  |
| 13736 | pointermove | COLOR\_GREEN-DOT\_1 | 587.3334 | 313.3333 | COLOR\_DOT | |  |  |
| 13750 | pointermove | COLOR\_GREEN-DOT\_1 | 506 | 337.3333 | COLOR\_DOT | |  |  |
| 13771 | pointermove | COLOR\_GREEN-DOT\_1 | 406.6667 | 372 | COLOR\_DOT | |  |  |
| 13786 | pointermove | COLOR\_GREEN-DOT\_1 | 353.3333 | 391.3333 | COLOR\_DOT | |  |  |
| 13799 | pointermove | COLOR\_GREEN-DOT\_1 | 317.3333 | 403.3333 | COLOR\_DOT | |  |  |
| 13820 | pointermove | COLOR\_GREEN-DOT\_1 | 281.3333 | 416 | COLOR\_DOT | |  |  |
| 13834 | pointermove | COLOR\_GREEN-DOT\_1 | 262.6667 | 420 | COLOR\_DOT | |  |  |
| 13847 | pointermove | COLOR\_GREEN-DOT\_1 | 248.6667 | 420.6667 | COLOR\_DOT | |  |  |
| 13869 | pointermove | COLOR\_GREEN-DOT\_1 | 235.3333 | 420.6667 | COLOR\_DOT | |  |  |
| 13882 | pointermove | COLOR\_GREEN-DOT\_1 | 226.6667 | 418.6667 | COLOR\_DOT | |  |  |
| 13903 | pointermove | COLOR\_GREEN-DOT\_1 | 220 | 416 | COLOR\_DOT | |  |  |
| 13918 | pointermove | COLOR\_GREEN-DOT\_1 | 216.6667 | 414.6667 | COLOR\_DOT | |  |  |
| 13925 | pointermove | COLOR\_GREEN-DOT\_1 | 216 | 413.3333 | COLOR\_DOT | |  |  |
| 13946 | pointermove | COLOR\_GREEN-DOT\_1 | 216 | 412 | COLOR\_DOT | |  |  |
| 13960 | pointermove | COLOR\_GREEN-DOT\_1 | 216 | 411.3333 | COLOR\_DOT | |  |  |
| 13987 | pointermove | COLOR\_GREEN-DOT\_1 | 217.3333 | 409.3333 | COLOR\_DOT | |  |  |
| 14002 | pointermove | COLOR\_GREEN-DOT\_1 | 224.6667 | 402 | COLOR\_DOT | |  |  |
| 14016 | pointermove | COLOR\_GREEN-DOT\_1 | 239.3333 | 390.6667 | COLOR\_DOT | |  |  |
| 14037 | pointermove | COLOR\_GREEN-DOT\_1 | 266 | 366 | COLOR\_DOT | |  |  |
| 14050 | pointermove | COLOR\_GREEN-DOT\_1 | 279.3333 | 358 | COLOR\_DOT | |  |  |
| 14065 | pointermove | COLOR\_GREEN-DOT\_1 | 282.6667 | 356 | COLOR\_DOT | |  |  |
| 14072 | pointermove | COLOR\_GREEN-DOT\_1 | 284 | 355.3333 | COLOR\_DOT | |  |  |
| 14148 | pointermove | COLOR\_GREEN-DOT\_1 | 284 | 354.6667 | COLOR\_DOT | |  |  |
| 14169 | pointermove | COLOR\_GREEN-DOT\_1 | 282.6667 | 354 | COLOR\_DOT | |  |  |
| 14183 | pointermove | COLOR\_GREEN-DOT\_1 | 282.6667 | 352.6667 | COLOR\_DOT | |  |  |
| 14197 | pointermove | COLOR\_GREEN-DOT\_1 | 282 | 352 | COLOR\_DOT | |  |  |
| 14219 | pointermove | COLOR\_GREEN-DOT\_1 | 281.3333 | 351.3333 | COLOR\_DOT | |  |  |
| 14232 | pointermove | COLOR\_GREEN-DOT\_1 | 280.6667 | 350.6667 | COLOR\_DOT | |  |  |
| 14246 | pointermove | COLOR\_GREEN-DOT\_1 | 280 | 350 | COLOR\_DOT | |  |  |
| 14317 | pointerup | COLOR\_GREEN-DOT\_1 | 280 | 350 | COLOR\_DOT | |  |  |
| 15414 | pointerdown | COLOR\_GREEN-DOT\_3 | 1088.667 | 292.6667 | COLOR\_DOT | |  |  |
| 15512 | pointermove | COLOR\_GREEN-DOT\_3 | 1070 | 284.6667 | COLOR\_DOT | |  |  |
| 15519 | pointermove | COLOR\_GREEN-DOT\_3 | 1045.333 | 276.6667 | COLOR\_DOT | |  |  |
| 15533 | pointermove | COLOR\_GREEN-DOT\_3 | 1000.667 | 274 | COLOR\_DOT | |  |  |
| 15547 | pointermove | COLOR\_GREEN-DOT\_3 | 964 | 279.3333 | COLOR\_DOT | |  |  |
| 15568 | pointermove | COLOR\_GREEN-DOT\_3 | 894.6667 | 302 | COLOR\_DOT | |  |  |
| 15582 | pointermove | COLOR\_GREEN-DOT\_3 | 842 | 321.3333 | COLOR\_DOT | |  |  |
| 15603 | pointermove | COLOR\_GREEN-DOT\_3 | 764 | 348.6667 | COLOR\_DOT | |  |  |
| 15617 | pointermove | COLOR\_GREEN-DOT\_3 | 718 | 360 | COLOR\_DOT | |  |  |
| 15631 | pointermove | COLOR\_GREEN-DOT\_3 | 677.3334 | 366 | COLOR\_DOT | |  |  |
| 15652 | pointermove | COLOR\_GREEN-DOT\_3 | 620 | 371.3333 | COLOR\_DOT | |  |  |
| 15665 | pointermove | COLOR\_GREEN-DOT\_3 | 586 | 371.3333 | COLOR\_DOT | |  |  |
| 15680 | pointermove | COLOR\_GREEN-DOT\_3 | 560.6667 | 370.6667 | COLOR\_DOT | |  |  |
| 15700 | pointermove | COLOR\_GREEN-DOT\_3 | 532.6667 | 367.3333 | COLOR\_DOT | |  |  |
| 15714 | pointermove | COLOR\_GREEN-DOT\_3 | 520.6667 | 364.6667 | COLOR\_DOT | |  |  |
| 15735 | pointermove | COLOR\_GREEN-DOT\_3 | 513.3334 | 363.3333 | COLOR\_DOT | |  |  |
| 15750 | pointermove | COLOR\_GREEN-DOT\_3 | 510.6667 | 362.6667 | COLOR\_DOT | |  |  |
| 15763 | pointermove | COLOR\_GREEN-DOT\_3 | 510 | 362 | COLOR\_DOT | |  |  |
| 15777 | pointermove | COLOR\_GREEN-DOT\_3 | 509.3334 | 362 | COLOR\_DOT | |  |  |
| 15792 | pointermove | COLOR\_GREEN-DOT\_3 | 508.6667 | 362 | COLOR\_DOT | |  |  |
| 15819 | pointermove | COLOR\_GREEN-DOT\_3 | 507.3333 | 362 | COLOR\_DOT | |  |  |
| 15833 | pointermove | COLOR\_GREEN-DOT\_3 | 506 | 362 | COLOR\_DOT | |  |  |
| 15847 | pointermove | COLOR\_GREEN-DOT\_3 | 504 | 362.6667 | COLOR\_DOT | |  |  |
| 15868 | pointermove | COLOR\_GREEN-DOT\_3 | 500.6667 | 362.6667 | COLOR\_DOT | |  |  |
| 15875 | pointermove | COLOR\_GREEN-DOT\_3 | 500 | 362.6667 | COLOR\_DOT | |  |  |
| 15889 | pointermove | COLOR\_GREEN-DOT\_3 | 499.3333 | 362.6667 | COLOR\_DOT | |  |  |
| 15910 | pointerup | COLOR\_GREEN-DOT\_3 | 499.3333 | 362.6667 | COLOR\_DOT | |  |  |
| 16714 | pointerdown | COLOR\_BLUE-DOT\_1 | 760 | 474.6667 | COLOR\_DOT | |  |  |
| 16980 | pointermove | COLOR\_BLUE-DOT\_1 | 745.3334 | 484 | COLOR\_DOT | |  |  |
| 17000 | pointermove | COLOR\_BLUE-DOT\_1 | 679.3334 | 505.3334 | COLOR\_DOT | |  |  |
| 17015 | pointermove | COLOR\_BLUE-DOT\_1 | 646 | 506 | COLOR\_DOT | |  |  |
| 17029 | pointermove | COLOR\_BLUE-DOT\_1 | 599.3334 | 501.3334 | COLOR\_DOT | |  |  |
| 17049 | pointermove | COLOR\_BLUE-DOT\_1 | 522 | 490.6667 | COLOR\_DOT | |  |  |
| 17064 | pointermove | COLOR\_BLUE-DOT\_1 | 466 | 486 | COLOR\_DOT | |  |  |
| 17084 | pointermove | COLOR\_BLUE-DOT\_1 | 400.6667 | 486 | COLOR\_DOT | |  |  |
| 17098 | pointermove | COLOR\_BLUE-DOT\_1 | 379.3333 | 490.6667 | COLOR\_DOT | |  |  |
| 17112 | pointermove | COLOR\_BLUE-DOT\_1 | 367.3333 | 496.6667 | COLOR\_DOT | |  |  |
| 17133 | pointermove | COLOR\_BLUE-DOT\_1 | 358 | 503.3334 | COLOR\_DOT | |  |  |
| 17147 | pointermove | COLOR\_BLUE-DOT\_1 | 352.6667 | 506 | COLOR\_DOT | |  |  |
| 17169 | pointermove | COLOR\_BLUE-DOT\_1 | 342.6667 | 511.3334 | COLOR\_DOT | |  |  |
| 17182 | pointermove | COLOR\_BLUE-DOT\_1 | 335.3333 | 513.3334 | COLOR\_DOT | |  |  |
| 17196 | pointermove | COLOR\_BLUE-DOT\_1 | 326.6667 | 516.6667 | COLOR\_DOT | |  |  |
| 17217 | pointermove | COLOR\_BLUE-DOT\_1 | 313.3333 | 518 | COLOR\_DOT | |  |  |
| 17231 | pointermove | COLOR\_BLUE-DOT\_1 | 302.6667 | 518 | COLOR\_DOT | |  |  |
| 17245 | pointermove | COLOR\_BLUE-DOT\_1 | 294.6667 | 518 | COLOR\_DOT | |  |  |
| 17266 | pointermove | COLOR\_BLUE-DOT\_1 | 286 | 517.3334 | COLOR\_DOT | |  |  |
| 17281 | pointermove | COLOR\_BLUE-DOT\_1 | 283.3333 | 516.6667 | COLOR\_DOT | |  |  |
| 17294 | pointermove | COLOR\_BLUE-DOT\_1 | 282 | 514.6667 | COLOR\_DOT | |  |  |
| 17315 | pointermove | COLOR\_BLUE-DOT\_1 | 281.3333 | 513.3334 | COLOR\_DOT | |  |  |
| 17323 | pointermove | COLOR\_BLUE-DOT\_1 | 280.6667 | 512.6667 | COLOR\_DOT | |  |  |
| 17351 | pointermove | COLOR\_BLUE-DOT\_1 | 280.6667 | 511.3334 | COLOR\_DOT | |  |  |
| 17364 | pointermove | COLOR\_BLUE-DOT\_1 | 280.6667 | 510 | COLOR\_DOT | |  |  |
| 17372 | pointermove | COLOR\_BLUE-DOT\_1 | 281.3333 | 509.3334 | COLOR\_DOT | |  |  |
| 17399 | pointermove | COLOR\_BLUE-DOT\_1 | 281.3333 | 508 | COLOR\_DOT | |  |  |
| 17406 | pointermove | COLOR\_BLUE-DOT\_1 | 281.3333 | 507.3334 | COLOR\_DOT | |  |  |
| 17427 | pointermove | COLOR\_BLUE-DOT\_1 | 281.3333 | 506.6667 | COLOR\_DOT | |  |  |
| 17441 | pointermove | COLOR\_BLUE-DOT\_1 | 281.3333 | 506 | COLOR\_DOT | |  |  |
| 17455 | pointermove | COLOR\_BLUE-DOT\_1 | 281.3333 | 505.3334 | COLOR\_DOT | |  |  |
| 17497 | pointermove | COLOR\_BLUE-DOT\_1 | 281.3333 | 504.6667 | COLOR\_DOT | |  |  |
| 17518 | pointermove | COLOR\_BLUE-DOT\_1 | 281.3333 | 504 | COLOR\_DOT | |  |  |
| 17546 | pointerup | COLOR\_BLUE-DOT\_1 | 281.3333 | 504 | COLOR\_DOT | |  |  |
| 18259 | pointerdown | COLOR\_BLUE-DOT\_2 | 954.6667 | 469.3334 | COLOR\_DOT | |  |  |
| 18420 | pointermove | COLOR\_BLUE-DOT\_2 | 948.6667 | 473.3334 | COLOR\_DOT | |  |  |
| 18433 | pointermove | COLOR\_BLUE-DOT\_2 | 902 | 499.3334 | COLOR\_DOT | |  |  |
| 18447 | pointermove | COLOR\_BLUE-DOT\_2 | 835.3334 | 524 | COLOR\_DOT | |  |  |
| 18461 | pointermove | COLOR\_BLUE-DOT\_2 | 769.3334 | 536 | COLOR\_DOT | |  |  |
| 18482 | pointermove | COLOR\_BLUE-DOT\_2 | 670.6667 | 539.3334 | COLOR\_DOT | |  |  |
| 18496 | pointermove | COLOR\_BLUE-DOT\_2 | 604 | 536.6667 | COLOR\_DOT | |  |  |
| 18518 | pointermove | COLOR\_BLUE-DOT\_2 | 521.3334 | 525.3334 | COLOR\_DOT | |  |  |
| 18531 | pointermove | COLOR\_BLUE-DOT\_2 | 480 | 520 | COLOR\_DOT | |  |  |
| 18546 | pointermove | COLOR\_BLUE-DOT\_2 | 452.6667 | 516.6667 | COLOR\_DOT | |  |  |
| 18566 | pointermove | COLOR\_BLUE-DOT\_2 | 426.6667 | 509.3334 | COLOR\_DOT | |  |  |
| 18580 | pointermove | COLOR\_BLUE-DOT\_2 | 417.3333 | 506 | COLOR\_DOT | |  |  |
| 18595 | pointermove | COLOR\_BLUE-DOT\_2 | 412.6667 | 502 | COLOR\_DOT | |  |  |
| 18615 | pointermove | COLOR\_BLUE-DOT\_2 | 408 | 497.3334 | COLOR\_DOT | |  |  |
| 18629 | pointermove | COLOR\_BLUE-DOT\_2 | 406 | 496 | COLOR\_DOT | |  |  |
| 18650 | pointermove | COLOR\_BLUE-DOT\_2 | 404 | 495.3334 | COLOR\_DOT | |  |  |
| 18664 | pointermove | COLOR\_BLUE-DOT\_2 | 403.3333 | 495.3334 | COLOR\_DOT | |  |  |
| 18678 | pointermove | COLOR\_BLUE-DOT\_2 | 402.6667 | 494.6667 | COLOR\_DOT | |  |  |
| 18699 | pointermove | COLOR\_BLUE-DOT\_2 | 400.6667 | 494 | COLOR\_DOT | |  |  |
| 18713 | pointermove | COLOR\_BLUE-DOT\_2 | 398.6667 | 493.3334 | COLOR\_DOT | |  |  |
| 18727 | pointermove | COLOR\_BLUE-DOT\_2 | 398 | 493.3334 | COLOR\_DOT | |  |  |
| 18748 | pointermove | COLOR\_BLUE-DOT\_2 | 396 | 492 | COLOR\_DOT | |  |  |
| 18755 | pointermove | COLOR\_BLUE-DOT\_2 | 395.3333 | 491.3334 | COLOR\_DOT | |  |  |
| 18783 | pointermove | COLOR\_BLUE-DOT\_2 | 395.3333 | 489.3334 | COLOR\_DOT | |  |  |
| 18790 | pointermove | COLOR\_BLUE-DOT\_2 | 395.3333 | 488.6667 | COLOR\_DOT | |  |  |
| 18804 | pointerup | COLOR\_BLUE-DOT\_2 | 395.3333 | 488.6667 | COLOR\_DOT | |  |  |
| 19567 | pointerdown | COLOR\_BLUE-DOT\_3 | 965.3334 | 307.3333 | COLOR\_DOT | |  |  |
| 19706 | pointermove | COLOR\_BLUE-DOT\_3 | 958 | 319.3333 | COLOR\_DOT | |  |  |
| 19713 | pointermove | COLOR\_BLUE-DOT\_3 | 941.3334 | 346 | COLOR\_DOT | |  |  |
| 19727 | pointermove | COLOR\_BLUE-DOT\_3 | 906.6667 | 388.6667 | COLOR\_DOT | |  |  |
| 19748 | pointermove | COLOR\_BLUE-DOT\_3 | 860 | 428.6667 | COLOR\_DOT | |  |  |
| 19761 | pointermove | COLOR\_BLUE-DOT\_3 | 826.6667 | 450.6667 | COLOR\_DOT | |  |  |
| 19782 | pointermove | COLOR\_BLUE-DOT\_3 | 781.3334 | 472 | COLOR\_DOT | |  |  |
| 19799 | pointermove | COLOR\_BLUE-DOT\_3 | 752 | 480.6667 | COLOR\_DOT | |  |  |
| 19811 | pointermove | COLOR\_BLUE-DOT\_3 | 729.3334 | 487.3334 | COLOR\_DOT | |  |  |
| 19832 | pointermove | COLOR\_BLUE-DOT\_3 | 700.6667 | 493.3334 | COLOR\_DOT | |  |  |
| 19846 | pointermove | COLOR\_BLUE-DOT\_3 | 686.6667 | 496.6667 | COLOR\_DOT | |  |  |
| 19859 | pointermove | COLOR\_BLUE-DOT\_3 | 678.6667 | 498.6667 | COLOR\_DOT | |  |  |
| 19881 | pointermove | COLOR\_BLUE-DOT\_3 | 673.3334 | 501.3334 | COLOR\_DOT | |  |  |
| 19894 | pointermove | COLOR\_BLUE-DOT\_3 | 671.3334 | 501.3334 | COLOR\_DOT | |  |  |
| 19916 | pointermove | COLOR\_BLUE-DOT\_3 | 668 | 501.3334 | COLOR\_DOT | |  |  |
| 19929 | pointermove | COLOR\_BLUE-DOT\_3 | 665.3334 | 501.3334 | COLOR\_DOT | |  |  |
| 19944 | pointermove | COLOR\_BLUE-DOT\_3 | 660 | 500 | COLOR\_DOT | |  |  |
| 19964 | pointermove | COLOR\_BLUE-DOT\_3 | 649.3334 | 498.6667 | COLOR\_DOT | |  |  |
| 19979 | pointermove | COLOR\_BLUE-DOT\_3 | 642.6667 | 498.6667 | COLOR\_DOT | |  |  |
| 19999 | pointermove | COLOR\_BLUE-DOT\_3 | 632 | 498.6667 | COLOR\_DOT | |  |  |
| 20013 | pointermove | COLOR\_BLUE-DOT\_3 | 621.3334 | 500.6667 | COLOR\_DOT | |  |  |
| 20028 | pointermove | COLOR\_BLUE-DOT\_3 | 610 | 501.3334 | COLOR\_DOT | |  |  |
| 20048 | pointermove | COLOR\_BLUE-DOT\_3 | 599.3334 | 504 | COLOR\_DOT | |  |  |
| 20062 | pointermove | COLOR\_BLUE-DOT\_3 | 595.3334 | 504.6667 | COLOR\_DOT | |  |  |
| 20078 | pointermove | COLOR\_BLUE-DOT\_3 | 592.6667 | 505.3334 | COLOR\_DOT | |  |  |
| 20097 | pointermove | COLOR\_BLUE-DOT\_3 | 589.3334 | 506 | COLOR\_DOT | |  |  |
| 20111 | pointermove | COLOR\_BLUE-DOT\_3 | 586 | 506.6667 | COLOR\_DOT | |  |  |
| 20132 | pointermove | COLOR\_BLUE-DOT\_3 | 582 | 507.3334 | COLOR\_DOT | |  |  |
| 20146 | pointermove | COLOR\_BLUE-DOT\_3 | 579.3334 | 508.6667 | COLOR\_DOT | |  |  |
| 20160 | pointermove | COLOR\_BLUE-DOT\_3 | 576.6667 | 508.6667 | COLOR\_DOT | |  |  |
| 20181 | pointermove | COLOR\_BLUE-DOT\_3 | 574.6667 | 508.6667 | COLOR\_DOT | |  |  |
| 20195 | pointermove | COLOR\_BLUE-DOT\_3 | 573.3334 | 508.6667 | COLOR\_DOT | |  |  |
| 20209 | pointermove | COLOR\_BLUE-DOT\_3 | 572.6667 | 508 | COLOR\_DOT | |  |  |
| 20223 | pointermove | COLOR\_BLUE-DOT\_3 | 571.3334 | 508 | COLOR\_DOT | |  |  |
| 20244 | pointermove | COLOR\_BLUE-DOT\_3 | 570.6667 | 508 | COLOR\_DOT | |  |  |
| 20265 | pointermove | COLOR\_BLUE-DOT\_3 | 568.6667 | 508 | COLOR\_DOT | |  |  |
| 20286 | pointermove | COLOR\_BLUE-DOT\_3 | 568 | 508 | COLOR\_DOT | |  |  |
| 20300 | pointermove | COLOR\_BLUE-DOT\_3 | 567.3334 | 508 | COLOR\_DOT | |  |  |
| 20335 | pointerup | COLOR\_BLUE-DOT\_3 | 567.3334 | 508 | COLOR\_DOT | |  |  |

V1\_V2: <https://miau.my-x.hu/bprof/2024/tavasz/V1_V2.docx>