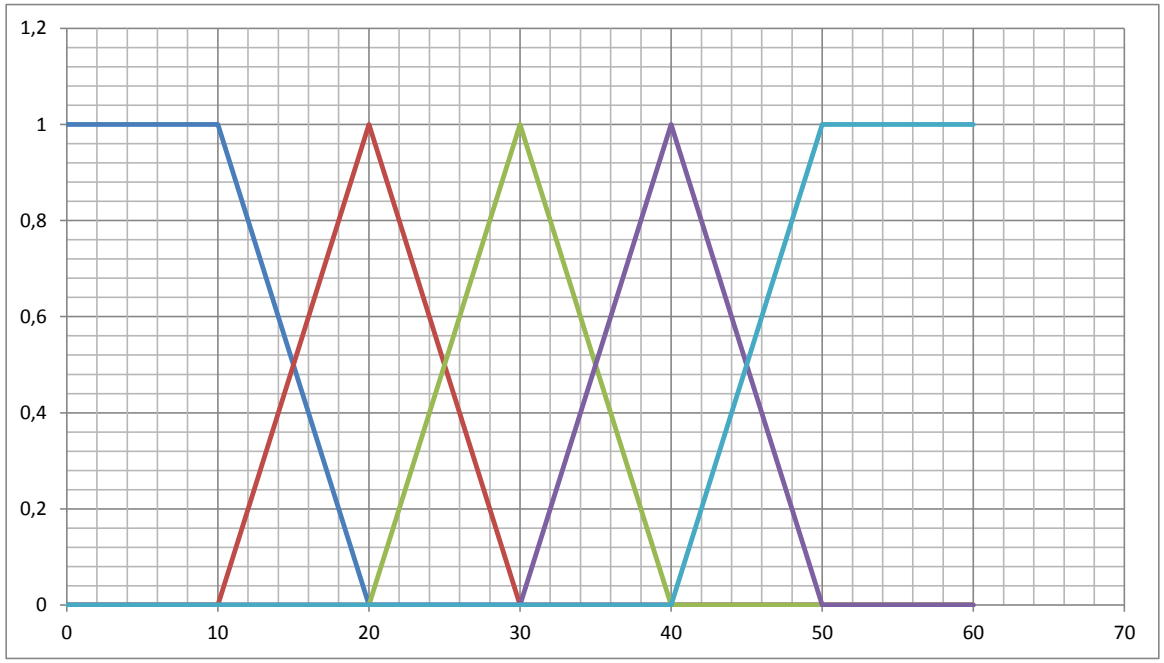
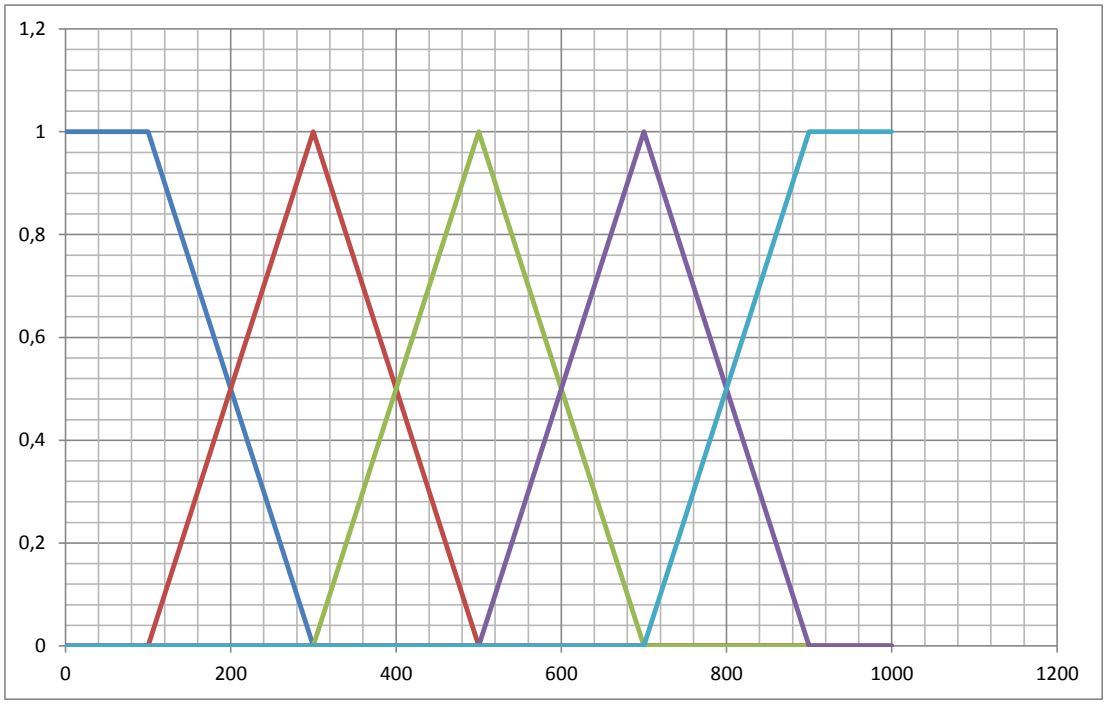
| **Speed** | 0 | 2,5 | 5 | 7,5 | 10 | 12,5 | 15 | 17,5 | 20 | 22,5 | 25 | 27,5 | 30 | 32,5 | 35 | 37,5 | 40 | 42,5 | 45 | 47,5 | 50 | 52,5 | 55 | 58 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| very slow | 1 | 1 | 1 | 1 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| slow | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| medium | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| fast | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 |
| very fast | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 1 | 1 | 1 | 1 |

| i | 1 | 5 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| X(i) | 10 | 40 | 10 | 20 | 30 |
| X(i+1) | 20 | 50 | 30 | 40 | 50 |



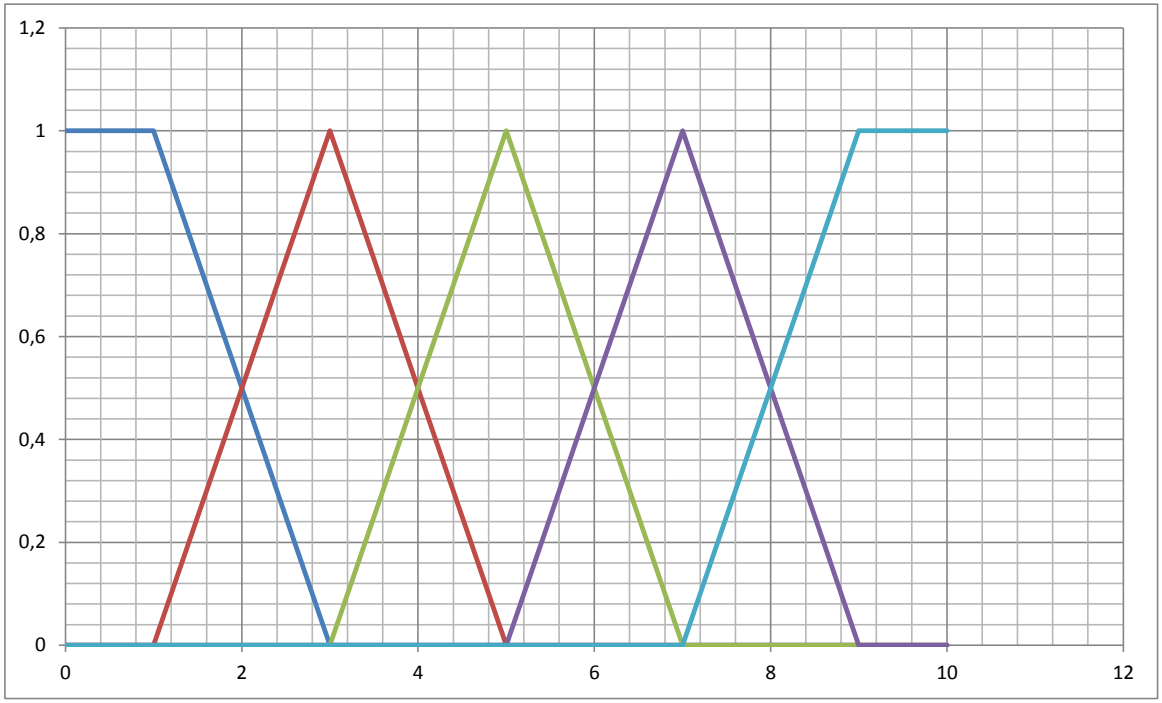
| **Distance** | 0 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| very shot | 1 | 1 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| short | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| medium | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| far | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 |
| very far | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 1 | 1 |

| i | 1 | 5 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| X(i) | 100 | 700 | 100 | 300 | 500 |
| X(i+1) | 300 | 900 | 500 | 700 | 900 |




| **Brake** | 0 | 0,5 | 1 | 1,5 | 2 | 2,5 | 3 | 3,5 | 4 | 4,5 | 5 | 5,5 | 6 | 6,5 | 7 | 7,5 | 8 | 8,5 | 9 | 9,5 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| very weak | 1 | 1 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| weak | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| medium | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| strong | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 0,75 | 0,5 | 0,25 | 0 | 0 | 0 |
| very strong | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,25 | 0,5 | 0,75 | 1 | 1 | 1 |

| i | 1 | 5 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| X(i) | 1 | 7 | 1 | 3 | 5 |
| X(i+1) | 3 | 9 | 5 | 7 | 9 |


1,2
1
0,8
0,6
0,4
0,2
0
0
2
4
6
8
10
12

**Sets of rules:**

IF speed is very slow ANDdistance  is very long THEN brake is very weak
IF speed is very slow AND distance  is long THEN brake is very weak
IF speed is very slow AND distance  is medium THEN brake is weak
IF speed is very slow AND distance is short THEN brake is weak
IF speed is very slow AND distance is very short THEN brake is medium
IF speed is slow AND distance is very long THEN brake is very weak
IF speed  is slow AND distance is long THEN brake is very weak
IF speed is slow AND distance is medium THEN brake is weak
IF speed is slow AND distance is short THEN brake is weak
IF speed is slow AND distance is very short THEN brake is medium
IF speed is medium AND distance is very long THEN brake is weak
IF speed is medium AND distance is long THEN brake is weak
IF speed is medium AND distance is medium THEN brake is medium
IF speed is medium AND distance is short THEN brake is strong
IF speed is medium AND distance is very short THEN brake is strong
IF speed is fast AND distance is very long THEN brake is weak
IF speed is fast AND distance is long THEN brake is medium
IF speed is fast AND distance is medium THEN brake is strong
IF speed is fast AND distance is short THEN brake is strong
IF speed is fast AND distance is very short THEN brake is very strong
IF speed is very fast AND distance is very long THEN brake is medium
IF speed is very fast AND distance is long THEN brake is strong
IF speed is very fast AND distance is very medium THEN brake is strong
IF speed is very fast AND distance is short THEN brake is very strong
IF speed is very fast AND distance is very short THEN brake is very strong

**Examples of data:** **μ=min( max(μspeed) * max(μdist) ); max(μbrake))**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Speed** | 0 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| **max(μ_sp)** | 1 | 1 | 0,8 | 0,8 | 0,6 | 1 | 0,6 | 0,8 | 0,8 | 1 | 1 |
| **Distance** | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
| **max(μ_dis)** | 1 | 1 | 0,5 | 1 | 0,5 | 1 | 0,5 | 1 | 0,5 | 1 | 1 |
| **Break** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **max(μ_br)** | 1 | 1 | 0,5 | 1 | 0,5 | 1 | 0,5 | 1 | 0,5 | 1 | 1 |
| **μ** | 1 | 1 | 0,4 | 0,8 | 0,3 | 1 | 0,3 | 0,8 | 0,4 | 1 | 1 |

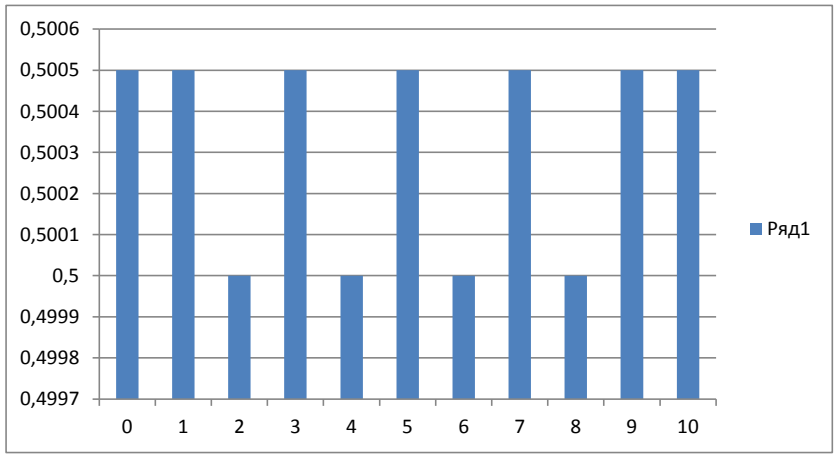
**We fix the speed and a distance:**

| μ_speed | μ_speed(37) | 0,7 |
|---|---|---|
| μ_distance | μ_distance(557) | 0,715 |

**max(μspeed) * max(μdist) = 0,5005**

| **Break** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **max(μ_br)** | 1 | 1 | 0,5 | 1 | 0,5 | 1 | 0,5 | 1 | 0,5 | 1 | 1 |
| **μ** | 0,5005 | 0,5005 | 0,5 | 0,5005 | 0,5 | 0,5005 | 0,5 | 0,5005 | 0,5 | 0,5005 | 0,5005 |

| μ * break | 0 | 0,5005 | 1 | 1,5015 | 2 | 2,5025 | 3 | 3,5035 | 4 | 4,5045 | 5,005 |
|---|---|---|---|---|---|---|---|---|---|---|---|




| **Center of Gravity:** | **∑(μ * break)/∑μ** | 5 |
|---|---|---|