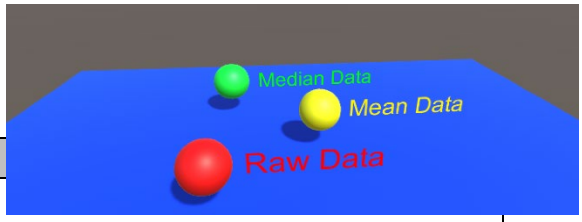
Main Topic: **Unity 3D** – Arrays & Mathematics
Keywords: Datenfilterung, Mittelwert, Median



A1 Listen

init

```
private float[] valRaw;
private int valSize = 61;

void Start() {
    valRaw = new float[valSize];
}
```

```
01 void Update() {
02     var v = Input.GetAxis("Vertical");
03     var h = Input.GetAxis("Horizontal");
04
05     float mx = Input.GetAxis("Mouse X");
06     float my = Input.GetAxis("Mouse Y");
07
08     if (Mathf.Abs(myRaw.transform.position.x + mx) < 6)
09     {
10         valRaw = exElement(valRaw, -myRaw.transform.position.x);
11         myRaw.transform.Translate(new Vector3(mx, 0, 0));
12
13         myMean.transform.position = new Vector3(-getMean(valRaw), 1, -1);
14         myMedian.transform.position = new Vector3(-getMedian(valRaw), 1, 1);
15         showArray(valRaw, "NewRaw");
16     }
17 }
```

A2 Methoden

Mittelwertberechnung, Mittel, Mean

$$\bar{x}_{\mathrm{arithm}} = \frac{1}{n}\sum_{i=1}^{n} x_i = \frac{x_1 + x_2 + \cdots + x_n}{n}$$

```
01 float getMean(float[] gotArray)
02 {
03     float sum = 0;
04     foreach (float item in gotArray) sum += item;
05     return (sum / gotArray.Length);
06 }
```

Medianberechnung, Zentralwert

```
01 float getMedian(float[] gotArray)
02 {
03     float[] copyRaw = (float[])gotArray.Clone();
04     Array.Sort(copyRaw);
05     return copyRaw[(int)Mathf.Round((copyRaw.Length - 1) / 2)];
06 }
```

Elemententausch (FIFO – first in first out)

```
01 float[] exElement(float[] gotArray, float element)
02 {
03     for (int i = 0; i < gotArray.Length-1; i++)
04         { gotArray[i] = gotArray[i+1]; }
05     valRaw[gotArray.Length - 1] = element;
06     return gotArray;
07 }
```

Anzeige (Hilfemethode)

```
01 void showArray(float[] outArray, string addText="")
02 {
03     string outString = "";
04     foreach (int item in outArray) outString += item + " ";
05     Debug.Log(addText+": "+outString);
06 }
```