

Decision making and n - dimensional graph - visualisation

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In today's turbulent times, good and fast decision-making processes are needed. There are many classical (e.g., decision trees) and advanced (e.g., neural networks) methods. If the decision is made by a person, not a computer, it is proper to use it to display the results of n-dimensional graphs. The example shows a 5-dimensional graph that shows the dependencies of Sale, Price, Quality, Group and Direction. The data are presented in the table and the 5-Dimensional graph in the figure.

Product	Sale	Price	Quality		Group	Direction
1	81	8	8		LS	-1
2	602	310	84		HS	1
3	445	78	5		HS	1
4	200	93	64		MS	1
5	62	60	2		LS	-1
6	228	40	40		LS	-1
7	107	180	25		MS	1
8	220	196	57		MS	-1
9	78	46	46		LS	1
10	174	80	21		LS	-1
11	223	120	18		MS	1
12	494	107	46		HS	-1
13	147	384	39		MS	1
14	102	42	31		LS	1
15	65	131	32		LS	-1
16	178	81	17		LS	1
17	570	10	15		HS	1

Tab. Table *Sale, Price, Quality, Group, Direction*

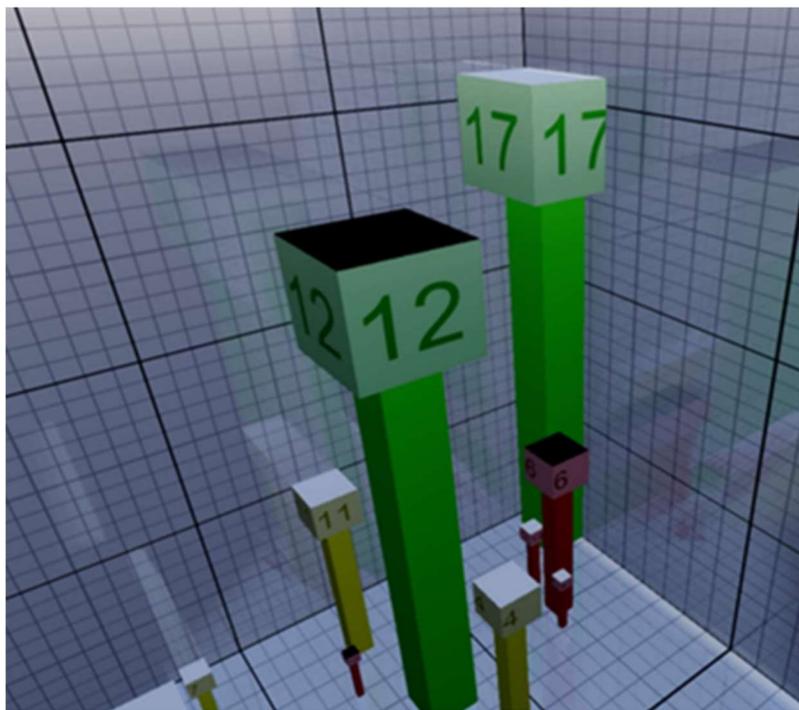


Fig. Five-dimensional graph *Sale, Price, Quality, Group, Direction*

The classic x, y, z axes are the variables of a 3-Dimensional graph with the quantities *Quality*, *Price*, and *Sale*, the fourth - dimension *Group* shows the cluster to belong (LS, MS, HS small, medium, and large sales) represented by the colour of the bar. The fifth dimension *Direction* showing declining sales and rising sales via black and white top area of the column, with black showing declining sales and white showing rising sales. The number on the column says the product number. The sixth dimension could be time.

The visualisation of n - dimensional graph could have much inputs, how is it presented in the following figure $X9=f(X1, X2)$ and many values $Ab=f(PI, Aad)$.



The n - dimensional graph could be connect and controlled via 3D mouse or virtual glasses.

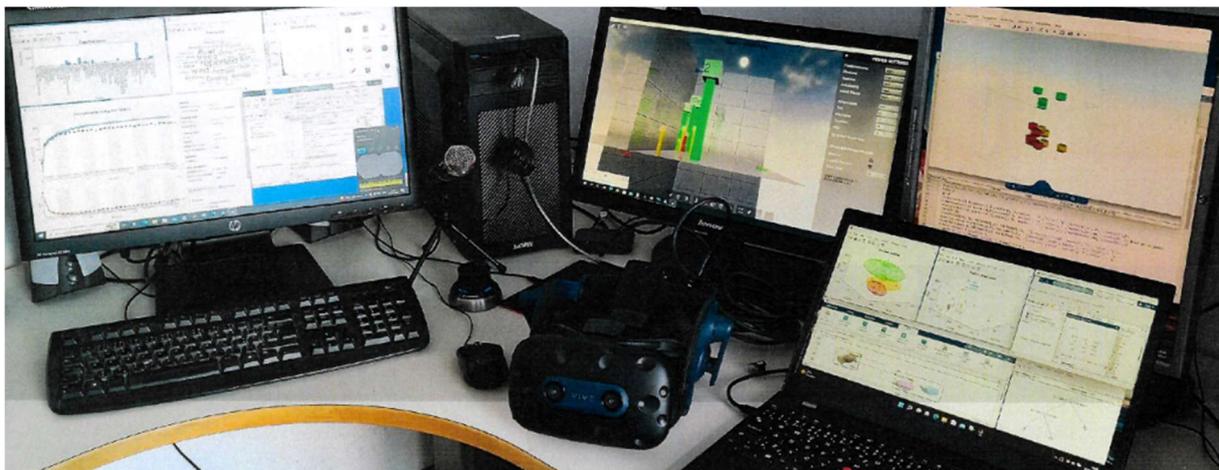


Fig. 3D mouse and virtual glasses

Literature: DOSTÁL, P. Soft computing v podnikatelství a veřejné správě - Dodatek, Brno: CERM Akademické nakladatelství, 2022, 68p, ISBN 978-80-7623-083-5, e-ISBN 978-80-7623-084-2.