TOWARDS THE DASHBOARD DESIGN SUPPORT USING FUZZY LOGIC

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Let us consider the Business Intelligence (BI) dashboard design problem, which assumes the selection of graphs, charts, and other visuals to put them into a space limited by the screen. Moreover, the problem of BI dashboard design also assumes the selection of appropriate charts and graphs, that must efficiently and informatively demonstrate indicators valuable for end users. Poorly designed dashboards, which are not space-efficient and not informative (i.e. do not precisely reflect dataset attributes, due to inappropriate visualizations) may mislead stakeholders, by shifting their focus to wrong or third-party things that require less attention [1]. Dashboards are essential BI tools that help to manage complex processes and make data-driven decisions. Dashboards are used in different industries and many ways: situational awareness, logistics management, risk management, performance monitoring, etc. Well-designed BI dashboards can help managers to make informed decisions, respond to threats, mitigate risks, allocate recourses, etc.

We propose to apply fuzzy logic to suggest charts for dashboard design [2]:

$$\mu\big(\#DS_i, ChartType_j\big): DS \times ChartTypes \to [0,1],$$

where DS is the collection of datasets used to build a dashboard; $\#DS_i$ is the size of i-th dataset; C is the collection of possible charts; C_j is the j-th chart. Membership function examples for card, bar, pie, and line charts [1] are shown in Fig. 1.
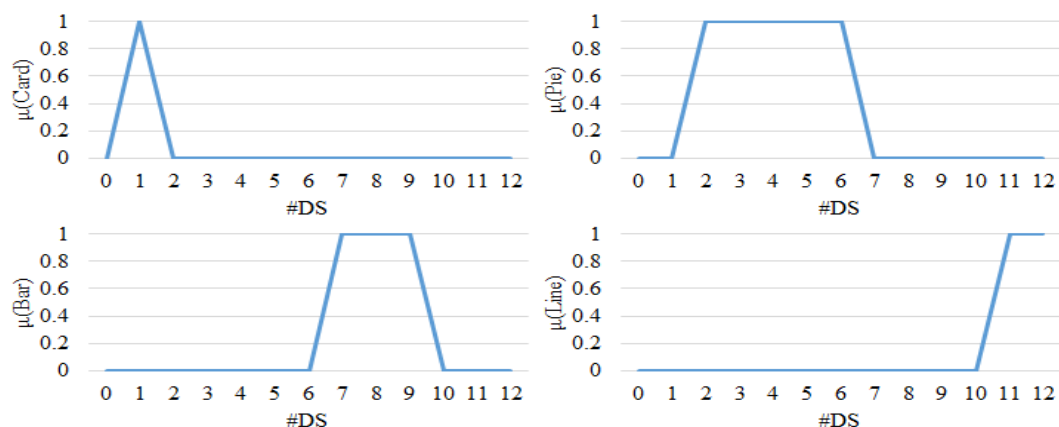

Fig. 1. – Membership function examples for chart selection in dashboard design

References:

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2. Kopp A., Orlovskyi D. An approach to forming dashboards for business process indicators analysis using fuzzy and semantic technologies. *CEUR Workshop Proceedings (CEUR-WS.org)*. 2018. Vol. 2122. P. 1–7.