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Dr. Soroosh Shalileh

1. Center for Language and Brain, HSE University, Myasnitskaya Ulitsa, 20, 101000 Moscow,Russia,
2. Russia; Vision Modelling Lab, HSE University, Myasnitskaya Ulitsa, 20, 101000 Moscow, Russia.

An Effective Partitional Crisp Clustering Method Using Gradient Descent Approach

Effective clustering methods have always been in great demand. In [1], we utilized the gradient descent optimization strategy, the workhorse of the neural networks domain, and proposed an effective clustering method using the gradient descent approach. To improve the generalizability of the proposed method, we implemented it using an automatic differentiation library, and provided the possibility of applying any differentiable distance functions. We empirically assessed and compared the performance of our proposed method with four benchmark clustering methods from the literature on 11 real-world and 720 synthetic datasets. The experiments proved that our proposed method is valid, and in most cases, it is more effective than the competitors.

Keywords: Clustering objective functions; Clustering methods; Gradient descent approach

Biography:

Dr. Soroosh Shalileh was born in Tehran, Iran. He got his BEng and MEng in Electronic Engineering from IAU, Iran, and his PhD in Computer Science from HSE U. Moscow, Russia. He then started his research career as a junior researcher at HSE U. Later, he was promoted to the research fellow position at the Center for Language and Brain and head of the Vision Modeling Laboratory (at HSE U.). Currently, he runs a team of about eight research associates inside HSE U.; and the team focuses on (i) applied AI projects in the field of psychology or neuro-linguistic, (ii) developing multi-model computation approaches, and (iii) going beyond the IID assumption. Soroosh has published more than 15 papers and chapters in peer-reviewed journals and conferences and has also been reviewing papers for journals like PLoS One, Entropy, Mathetics, SN Computer Science Etc.

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