Glass Type Prediction according to quantity while mixing

The design of new glasses is formed by using old approach of trial and error. As progress in Artificial intelligence and machine learning accelerated, it helped in prediction of various types of glasses. The main aim of this project is to predict types of glasses formed by combining various elements of periodic table accurately. Virtually we have used dataset having various elements of periodic table with their proportion. This data is pre-processed and then given to machine learning model to predict the type of glass that composition of elements is forming. To experiment it, I have used Intel(R) Core (TM) i3-2350 CPU @ 2.30GHz 2.30GHz processor and 4GB RAM 64-bit operating system.

We have tried many machine learning classification algorithms like decision tree, Gradient Boosting, Random Forest out of which RFA gave best accuracy of 76%. This model reduced the physical efforts of forming composition of elements of periodic table to find out glass type, but it does prediction only based on dataset provided. It cannot understand any physics or chemistry related knowledge.

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References:

1. Han Liua, Zipeng Fua,b, Kai Yanga, Xinyi Xua,c, Mathieu Bauchya,⁎ "Machine learning for glass science and engineering: A review" https://www.sciencedirect.com/science/article/pii/S2590159119300494

Advantages:

- It reduced physical efforts of forming composition of elements of periodic table to find out glass type.

Disadvantages:

- This system does prediction only on the basis of dataset used to train model, but it cannot understand or use knowledge of physics or chemistry.