

## Task 5: Find Optimizing Diameters and Volumes

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### **Objective:**

For a given  $CF_{ref} = x$ , we consider CF as a function of the diameter D and the volume V of the storage unit. Our task is to find n optimizing  $D_i, V_i$  such that the resulting  $CF_i$  is x.

### **My Approach:**

I built an MLP to approximate the map  $(D, V) \rightarrow CF$ . Call this model *minNN*. Taking the points  $(D_k, V_k)$  in the training set we then run DNNOPT in order to find  $(D_k^*, V_k^*)$  such that  $\text{minNN}(D_k^*, V_k^*) = x$ .

Upon plotting the resulting points, it became clear that they were all lying along the same line. I therefore used linear regression, defined m points along the line (presumably close to being optimal).

I then ran DNNOPT on these points to find the final optimizers.