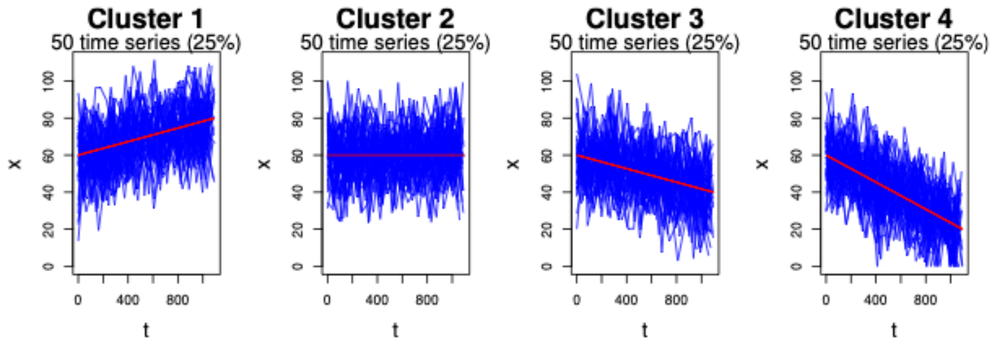
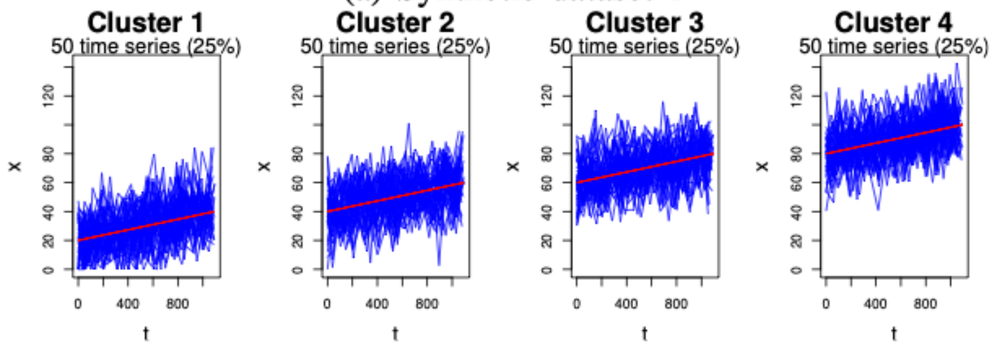
Cluster 2	$x = 60 + \epsilon$	$x = (4/219)t + 40 + \epsilon$	$x = 60 + \epsilon_2$ where $\epsilon_2 \sim \mathcal{N}(0, 20)$
Cluster 3	$x = (-4/219)t + 60 + \epsilon$	$x = (4/219)t + 60 + \epsilon$	$x = 60 + \epsilon_2$ where $\epsilon_3 \sim \mathcal{N}(0, 30)$
Cluster 4	$x = (-8/219)t + 60 + \epsilon$	$x = (4/219)t + 80 + \epsilon$	$x = 60 + \epsilon_2$ where $\epsilon_4 \sim \mathcal{N}(0, 40)$
	where $\epsilon \sim \mathcal{N}(0, 14)$		

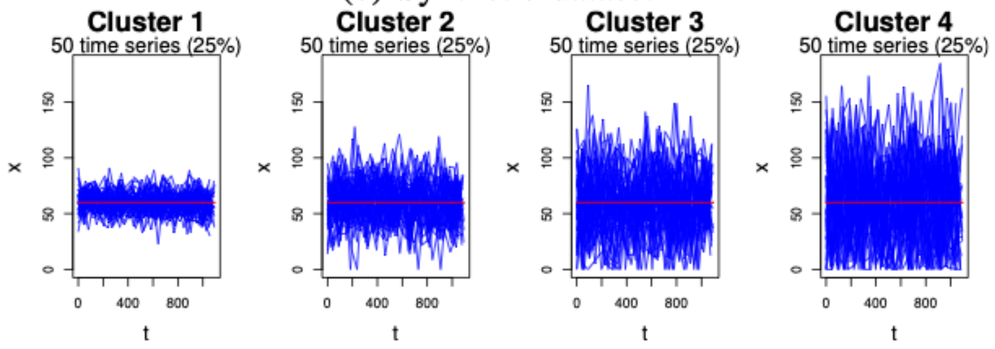
TABLE I: Summary of three synthetic datasets



(a) Synthetic dataset 1



(b) Synthetic dataset 2



(c) Synthetic dataset 3

longitudinal profile representations.

As we can see in figure 4a and figure 4d, the distribution of profile representations in synthetic dataset 1 does align with the ground-truth clusters, and this alignment is more visible in memory units than in hidden units. To quantify the alignment of representations in memory units / hidden units with the ground-truth clusters, we compute the silhouette coefficients [8] with ground-truth cluster assignments and distance metric between two longitudinal profiles is the Euclidean distance between their embedded representations. In Silhouette coefficient, the quality of individual data point in a clustering result with respect to a cluster assignment is quantified by the cluster tightness and degree of separation between neighboring clusters. The value of silhouette coefficient ranges from -1 to 1 in which higher value indicates better cluster assignment. The overall quality of a clustering result can be measured as the average of individual Silhouette coefficients. Table II shows the average silhouette coefficient when 3 types of longitudinal representations are used: (1) only hidden unit, (2) only memory unit and (3) both hidden and memory unit. As shown in Table II, for synthetic dataset 1, memory unit is significantly better in distinguishing four different