Team name	VecsRel – Team19
Team leader name	Recep Doga Siyli
Team leader address, phone number and email	Konaklar Mah. Org.İzzettin Aksalur Cad.İstanbul 2.Blok Daire:4 Beşiktaş-İSTANBUL +90-505-803 85 47 dogasiyli@gmail.com
Rest of team members	Nafiz Arica, Lale Akarun
Team website URL (if any)	NONE

Title of the contribution	??
General method description	1. Get the Kinect position data 2.Create relative Vectors for each bone 3.Find the Dynamic Time Warping Distance values between each and every training video patch 4. Sort all the training videos according to their mean distances to the other class videos 5. compare DTW distances of video patches to the best K training video patches per each class 6. 2nd phase- use the hand positions to crop hand areas from depth videos 7. Train the cropped hand videos for i-j class comparisons.Where i=1:19,j=i+1:20. 8. For evaluation of which class the frame belongs to – check the comparisons of frame possibilities. 9. Accept the frames with high class acceptance according to these comparisons. 10. Fuse the best probabilities Of DTW and cropped hand results.
References	Dynamic Time Warping, Deep-Learning

Describe data preprocessing techniques applied (if any)	We calculated Relative Bone Vectors using the joint positions Also according to ankle positions we cropped the left and right hand area to use as input features of 30x30 picture patches. We apply a normalization process to cropped hand frames.
Describe features used or data representation model (if any)	1. Relative Vectors – a 3d vector for each bone. 2. 30x30 normalized cropped hand pictures from depth images
Data modalities used, i.e. depth, rgb, skeleton… (if any)	Skeleton data - depth and user videos
Fusion strategy applied (if any)	Late fusion on Relative Vectors results (skeleton data) and cropped and results (depth video data)
Dimensionality reduction technique applied (if any)	1.Only the arm bones (4-2 right,2left) have been selected. 2.30x30 pictures have been reduced to 100 pixel representation using Deep-Learning.

Temporal clustering approach (if any)	Threshold on mean average of training video length of a class
Temporal segmentation approach (if any)	Check thresholds and comparisons on sliding window of DTW
Gesture representation approach (if any)	NONE
Classifier used (if any)	2-Class Deep Learning classifiers (190 classifiers per hand)
Large scale strategy (if any)	NONE

Transfer learning strategy (if any)	NONE
Temporal coherence and/or tracking approach considered (if any)	NONE
Other technique/strategy used not included in previous items (if any)	NONE
Method complexity analysis	??

Qualitative advantages of the proposed solution	We believe that the pre-processing step for input feature creation is good but needs to be used along with better learning techniques. Class-by-class comparison can be a bad idea for 20 class problem such as this.
Results of the comparison to other approaches (if any)	NONE
Novelty degree of the solution and if is has been previously published	Used method not applied or known to be applied in any paper. Resemblence to previous years Chalearn winner method on skeleton data using different features.

Language and implementation details (including platform, memory, parallelization requirements)	Matlab 2013a, Windows 7 64 bit, 12 GB Ram, 2.8 GHz – used computer needs at least 6 gb of ram due to reading the videos into memory (maybe a Matlab problem do not know if Python needs it too) Paralelization not used
Human effort required for implementation, training and validation?	NONE
Training/testing expended time?	for classA=1:19 For classB=classA:20 Train classifier for class_a_b End End This creates 190 classifier per hand (Right and left hands -> 380 classifiers calculated) Training for class-by-class deep learning : - Run class a by class b on computer above : 20-30 min - Run class a by class b on the server : qround 20-30 minutes - Run 10 different class comparison on a server in parallel with almost same power as the above computer : 2 hours
General comments and impressions of the challenge	1. Great challenge, great idea, great effort 2. Very helpful on the state of art methods on gesture recognition 3. A good real-world dataset to a real-world problem (usually senthetic data used for most studies) 4. For next year annotations can be improved by checking best teams method by writing a script for analysis of videos. A good annotation tool would take this competition and dataset to a better level.