

# STUDENT SEMINAR

**BEHNAM KAMRANIAN**

MSC CANDIDATE

UNIVERSITY OF LETHBRIDGE

**Title:** EVENT-BASED CLUSTERING AND LOOMING  
DETECTION

**Abstract:**

Based on the sequential K-means algorithm, we present a real-time, accurate and automatic clustering method for asynchronous events generated by the optical flow algorithm of Ridwan and Cheng. The complexity of our algorithm does not increase with increasing number of events. We also designed an implementation of the elbow method capable of detecting the number of clusters without any a priori assumptions on objects. In addition, we designed a merge algorithm capable of merging multiple touching clusters into one for enhancing the results of our clustering algorithm. The output of our clustering algorithm is then used with a single object looming detection algorithm to detect looming for multiple objects. We tested our algorithm on both simulated and captured data sets against two other well-known algorithms. Our algorithm is fast and accurate both in cluster detection quality and looming detection quality.

**WHEN**  
**FRIDAY, NOV 8**  
**12:00—12:50**

**WHERE**  
**C640**

**WHO**  
**ANYONE WHO'S**  
**INTERESTED**

**REFRESHMENTS**  
**DONUTS**



Pacific Institute *for the*  
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MATHEMATICS AND COMPUTER SCIENCE

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