# Unusual Human Event Detection Algorithm

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## BRIEF DESCRIPTION

Knowledge of the number of people in a building at a given time is crucial for applications such as emergency response. Researchers at UCI have developed a probabilistic model for predicting the occupancy of a building using networks of people counting sensors. This same model can be applied to detecting unusual variations in any large data set and making useful predictions.

## FULL DESCRIPTION

Time-series of count data are generated in many different contexts; web access logging, freeway traffic monitoring etc. Since this data measures the aggregated human behavior it typically exhibits a periodicity that reflects the rhythms of the underlying activity. Once those normal patterns are learned, any unusual activities can be predicted in real time. Real-time alerts of abnormal activity are a valuable asset in a variety of applications including security, emergency response manufacturing etc.

Researchers at UCI have developed an algorithm that discovers and models “normal” human activity patterns and then gives an alert. By using a non homogeneous Markov modulated Poisson process to model both typical and non-typical behavior a probabilistic prediction of unusual or unwanted activity is achieved in real time.

## SUGGESTED USES

Security, manufacturing, event planning, emergency operations, communications

## ADVANTAGES

Speed, reliability

## RELATED MATERIALS

» “Model Robust to Sensor Failure” 2008 2nd International Workshop on Knowledge Discovery from Sensor Data

## CONTACT

Edward Hsieh
hsiehe5@uci.edu
tel: 949-824-8428.


## OTHER INFORMATION

## CATEGORIZED AS

» **Communications**
» Other
» **Security and Defense**
» Other
» **Sensors & Instrumentation**
» Other

## RELATED CASES

2009-764-0

UCI Beall
Applied Innovation

5270 California Avenue / Irvine,CA
92697-7700 / Tel: 949.824.2683

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