

ASRU 2007 Panel  
Recording Situated Human Communication

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# Sensor car

car speed

Battery

perspiration

controller

head distance

data logger

steering angle

gas pedal  
brake pedal

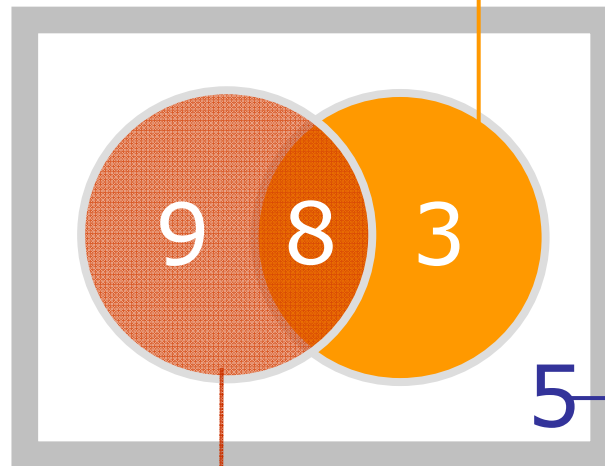
heart rate

# Dangeours Traffic Scenes in CIAIR Corpus

manual  
detection (25)

unusual  
utterance (11)

500 drivers  
45 min/driver  
Audio-video + behavior



sudden braking  
(17)

no significant change in  
behavior

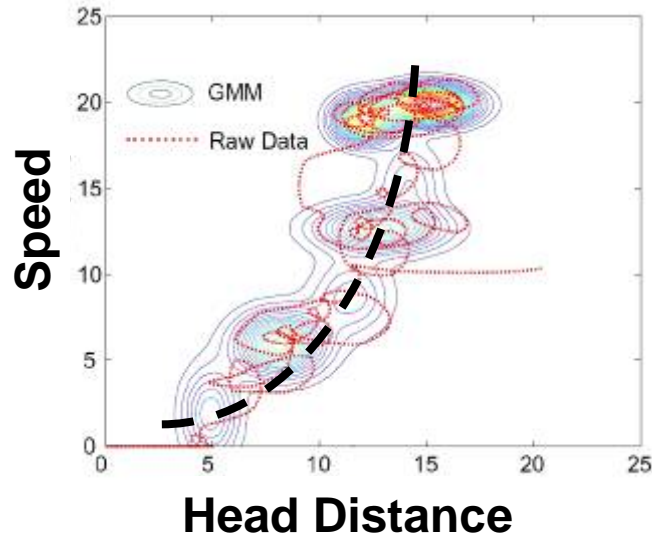
Can we automatically detect  
these dangerous scenes from recorded  
speech and driving behavior?

detected scene

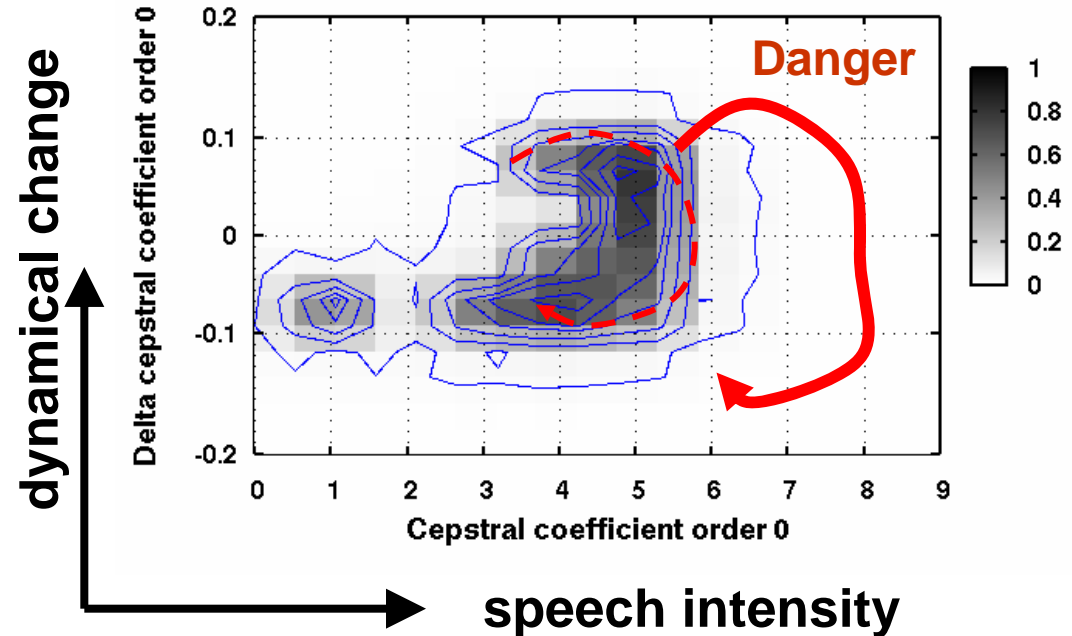


# Feature Representation

## Stochastic Phase Space of the behavior dynamics



Vehicle Dynamics  
(Phase Plane)



Speech Dynamics

- Stochastic representation of the dynamics of different modalities and their integration.

$$\log f_{X,\dot{X}}(x, \dot{x}) + \log f_{Y,\dot{Y}}(y, \dot{y})$$

Detection measure for the potential danger

# manually labeled dangerous secens



# Detecting potentially hazardous points!!

automatically detected (with 123 false detections)

