

# Real time visual subject tracking and classification by combining motion signal analysis and tri-dimensional shape feature classifiers with group induction boosting algorithms



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## Abstract

This paper provides a novel and unprecedented approach for integrating motion features in the detection and classification of moving subjects in a static environment. More specifically, author measure the impact of the use of trajectory history, rotation history, blob orientation, motion frequency in the three axes, motion acceleration, segmentation errors and flickering scores and how they can influence classification of moving people, pets and other objects. They apply our method to data captured by a combined color and depth camera sensor. They find that, while some motion descriptors slightly improve accuracy, the use of them in conjunction outperforms previous approaches in the classification and tracking of real world moving subjects in real-time.

### Biography

Lucas Roitman is an Honors graduate from Stanford University, has done research in AI at Stanford and has published numerous papers on the topic of robotics, vision, HCI, and other related fields. Lucas is regarded as a modern-day polymath or renaissance man, due to the breadth and variety of topics he has been involved in, and the impact he has had in those fields. Lucas has previously competed in national and international olympiads, winning medals for maths, computing, robotics, and informatics olympiads. Lucas has received full scholarships at Stanford, Tsinghua University (top in China), and an Exceptional Talent visa for the UK. He sold an Augmented Reality app when in middle school, and received funding for his companies while a sophomore at Stanford. Lucas is Director of Adia Robotics and is in the Editorial Board for the Journal of Nanotechnology and Applications.



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