SI2-SSE: Analyze Visual Data from Worldwide Network Cameras (Continuous Analysis of Many CAMeras, CAM²), NSFACI-1535108

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AM²

PURDUE UNIVERSITY

GOALS

- Discover real-time visual data from the Internet
- Retrieve and analyze the distributed data
- Respond to situations and observe trends

ACCOMPLISHMENTS

- 36 Research Papers
- 2 Granted Patents
- 2 Startup Companies
- Collaborators:

LOYOLA UNIVERSITY CHICAGO · AD MAIOREM DEI GLORIAM · 1870

intel

Argonne NATIONAL LABORATORY

FIU FLORIDA INTERNATIONAL UNIVERSITY

NANYANG TECHNOLOGICAL UNIVERSITY

NUS National University of Singapore

SEOUL NATIONAL UNIVERSITY

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EVALUATE CONSISTENCY OF COMPUTER VISION

"Large-Scale Object Detection of Images from Network Cameras", IEEE International Conference on Multimedia Information Processing and Retrieval 2019

Nighttime   Daytime
Foggy   Clear weather
Heavy traffic   Light traffic

EMERGENCY RESPONSES

"Cross-Referencing Social Media and Public Surveillance Camera Data for Disaster Response", IEEE Symposium on Technologies for Homeland Security 2018

2017 Houston Flooding

During Flooding (Left) and After (Right)

EDUCATION AND OUTREACH

DETECT DATASET BIAS BY CROWDSOURCING

- "Discovering Biases in Image Datasets with the Crowd", Human Computation and Crowdsourcing 2019
- "Crowdsourcing Detection of Sampling biases in Image Datasets", Web Conference 2020

Sample Images of Input Dataset

Biases Detected by the Crowd	The plane is facing right.
	There is only 1 airplane in each image.
	The airplane is parked.
	The main color of the airplanes is white.
	The photos are taken during the day.

DISCOVER NETWORK CAMERAS

- "System and Method for Identifying Publicly Available Cameras", Patent 10367877
- "Public Safety Camera Identification and Monitoring System and Method", Patent 10506201

PROTECT PRIVACY

Detect and encrypt faces at cameras