Toward Smart Cities: Manila

Workshop in AI Technology, Applications and Innovation for Digital Cities SCSE 2019

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A Little Background Info



Metro Manila: 16 cities, 1 municipality

- -- Population & Area: ~12.9M, ~620 km²
- -- Connectivity: SMS, LTE/4G, WiFi/Wired
- -- Sensors: CCTV, meteorological, "remote"



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Smart City – Leveraging ICT for better QoL*

Quality of Life



Key areas for "smartness"

- -- Disaster management (hazard alerts, monitoring, response)
- -- Security (crime, terrorism, external threats)
- -- Transportation (vehicle / pedestrian traffic)
- -- Asset monitoring & management (infrastructure, land, etc.)
- -- *Energy* (renewables)
- -- *Health* (spread-of-disease tracking)

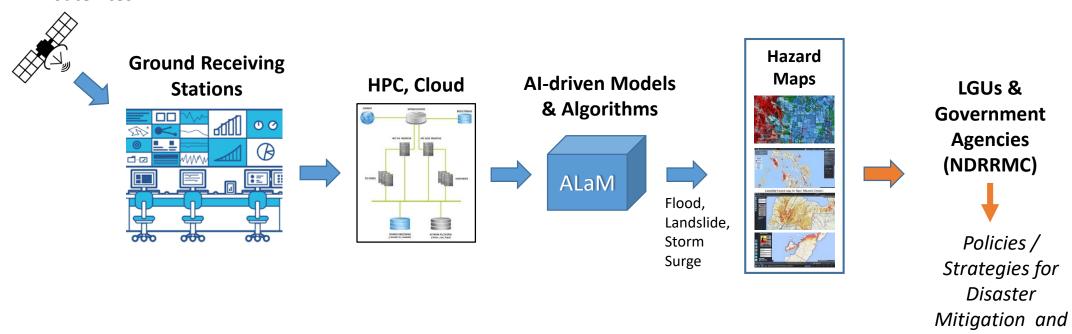


https://internetofthingsagenda.techtarget.com/definition/smart-city



Towards Smart City Disaster Management

Satellites



Prototypes for resource labeling and structure classification have been implemented.



Response

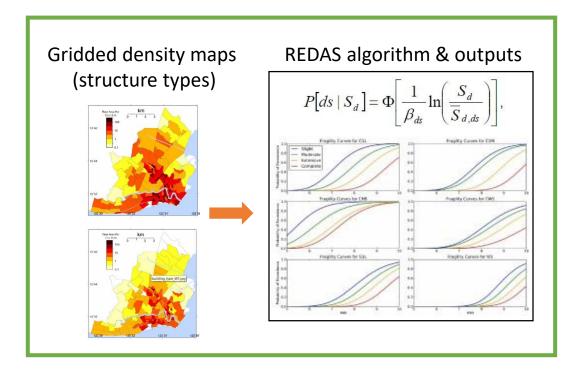


Structure Type Detection for Earthquake Damage Assessment (Proof-of-Concept)

Structure type detection from satellite images

ST **MST** W BG

Earthquake damage assessment (PHIVOLCS-REDAS)

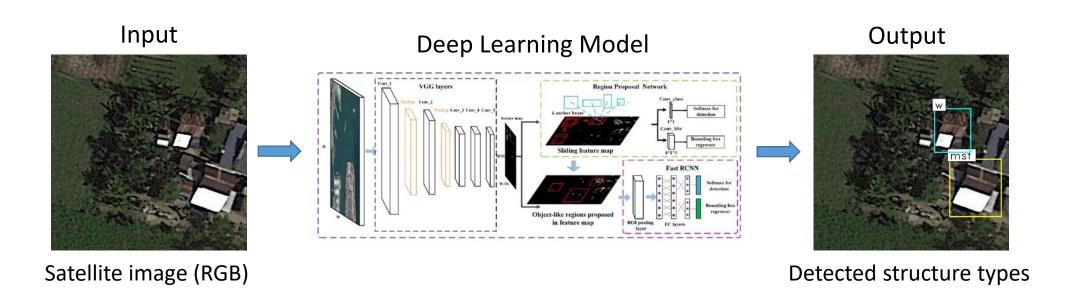






Detecting and Classifying Structures

Deep Learning method to "box-in" classified objects in an image





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Sample Results





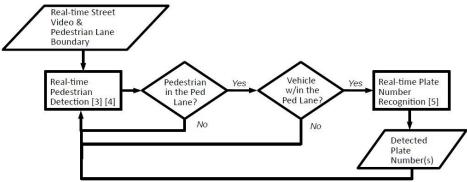






ASTI Pedestrian & Vehicle Detection





Features:

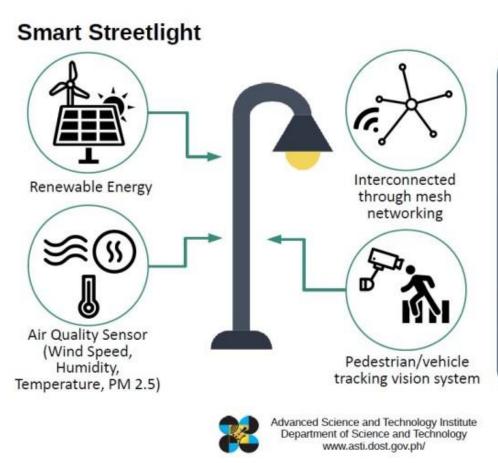
- -- initial goal is to detect people jaywalking and vehicles over-speeding and not stopping to give way to pedestrians (violation of RA 4136)
- -- uses deep learning
- -- solar-powered with battery storage (off-grid)
- can be extended to a bigger project on urban traffic monitoring and management



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ASTI Smart Streetlight



Objectives: - Eco-friendly - Sensor platform for gathering data - Traffic and pedestrian monitoring for safety regulations

Features:

- -- solar-powered with battery storage (off-grid)
- -- integrated environmental sensing (temp, humidity, air quality, etc.)
- with energy conservation mechanism (full brightness when a person is detected, else default low brightness)
- -- IoT-based network



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End of Presentation





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