



From Computational Urban Science to Urban Digital Twin

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TEXAS A&M INSTITUTE OF DATA SCIENCE
Design and Analytics Lab
for Urban Artificial Intelligence

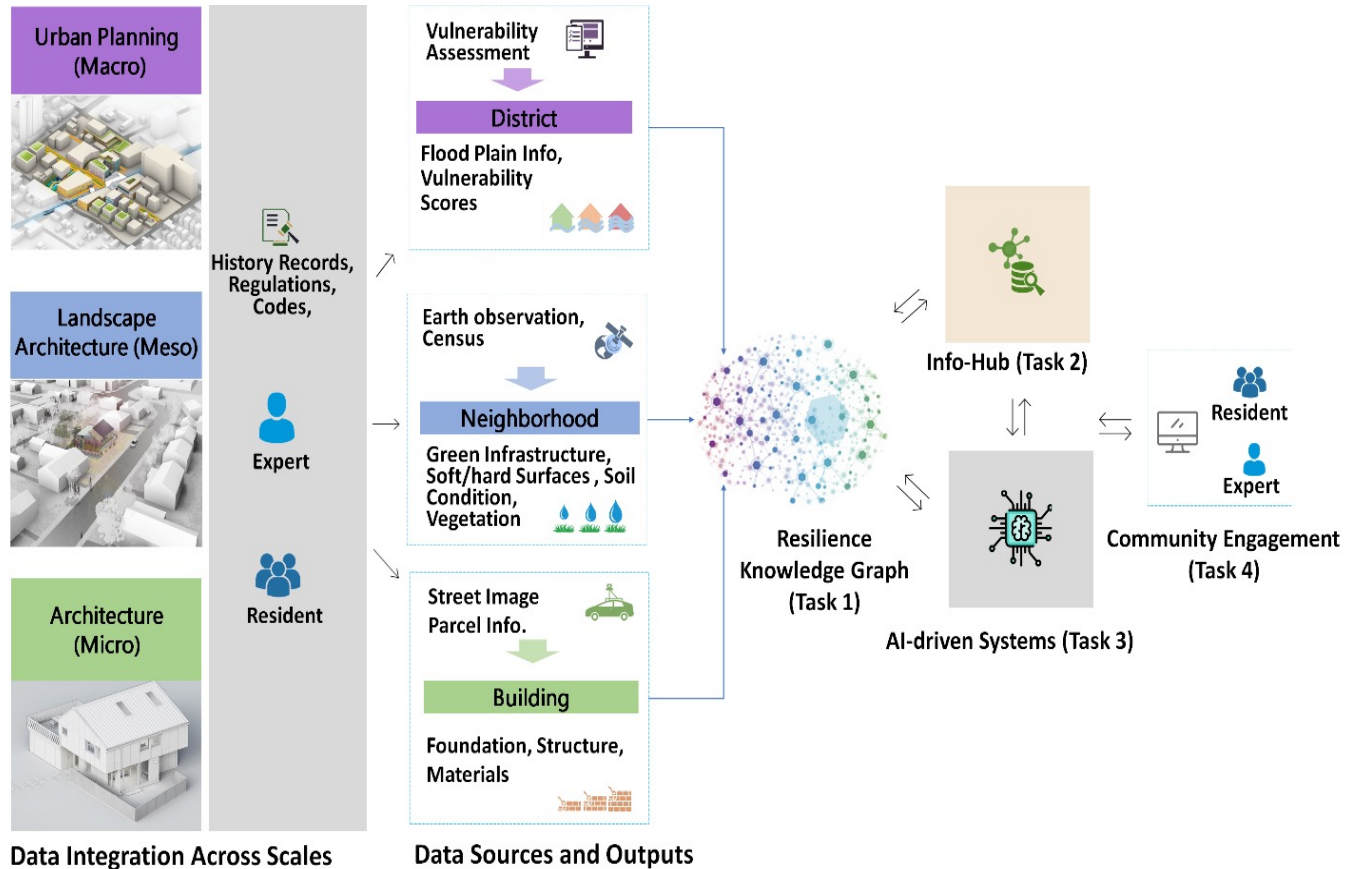


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Applications and Technology

Acknowledgment

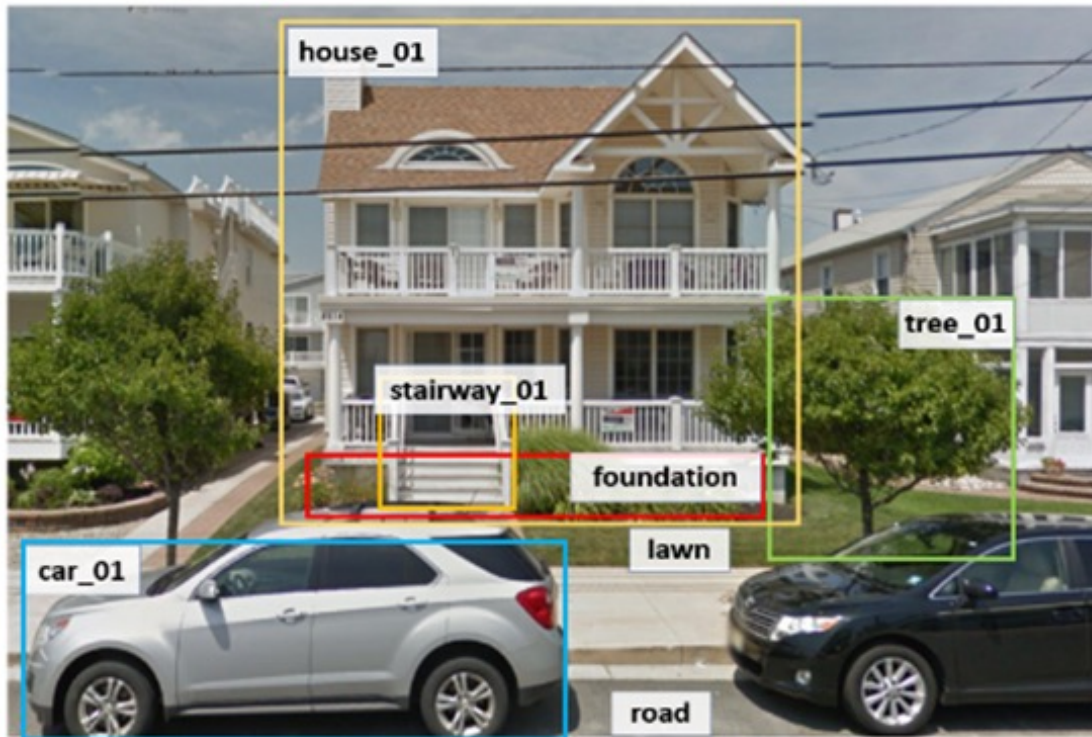
2021-2023 Building Equitable Safe Streets for All:
Data-Driven Approach and Computational Tools,
USDOT National University Transportation Center

AI-driven Framework for Resilience Planning and Design



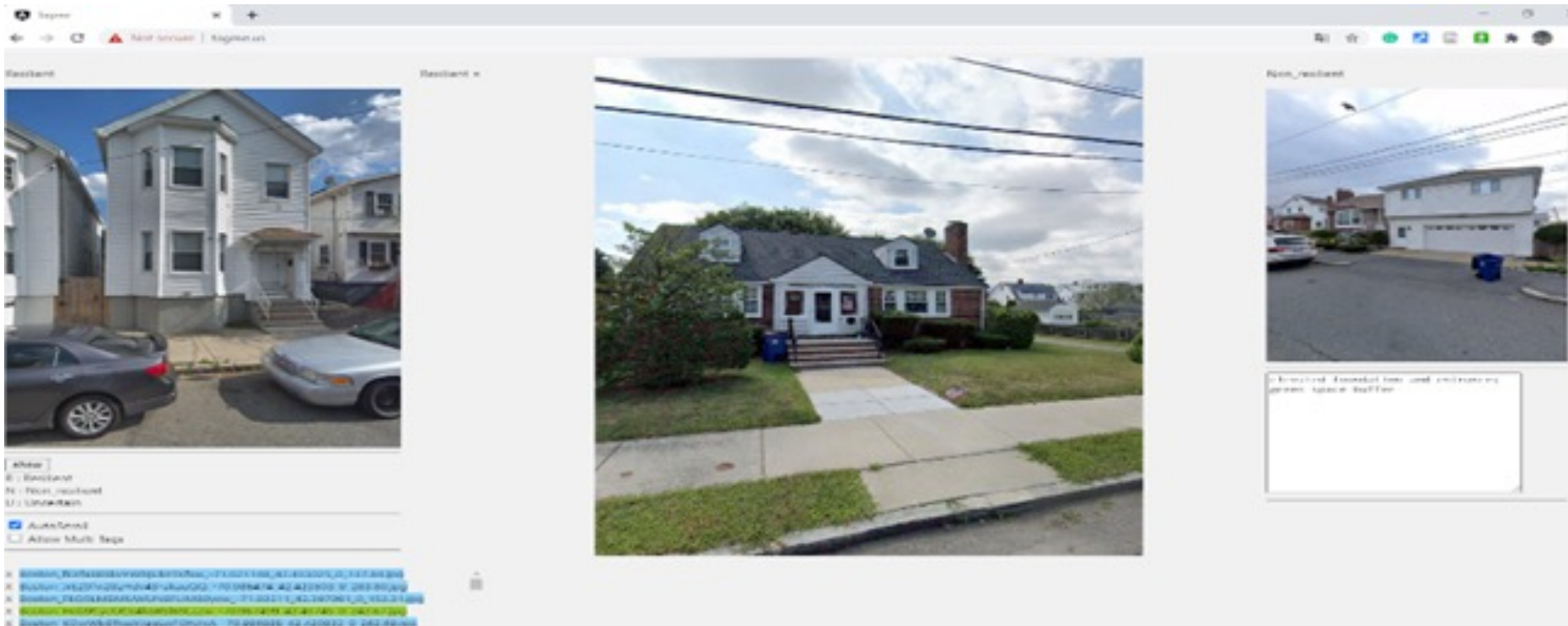
Ye, X., Wang, S., Lu, Z., Song, Y., and Yu, S. (2021). Towards an AI-driven Framework for Multi-scale Urban Flood Resilience Planning and Design. *Computational Urban Science*. doi: 10.1007/s43762-021-00011-0

Scene Graph



Legend	object	attribute	relationship
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Annotation Systems



Search System

Query image



Similar images



Walking

The image shows a Google Maps interface with a walking route highlighted in blue. The route starts at Fish Plaza and ends at Texas A&M University. The map includes various campus buildings, streets, and landmarks. Two callout boxes indicate a 10-minute walk of 0.5 miles for different segments of the route.

Map Labels: Church Parking, St. Mary's Catholic Center, CVS Drug store, Zachry Engineering Education Complex, Artie McFerrin Department of..., Department of Electrical & Computer Engineering, BonAppTea Takeout · Delivery, Shell, Cycotron Institute - Texas A&M University, Dwight Look Engineering Building, Department of Chemical Engineering, J. Mike Walker '66 Department of..., Harold Vance Department of..., Lot 54, College of Architecture Student Services, Scoates Hall, Architecture Quad, Department of Chemistry, Liberal Arts and Humanities, AI Engineering Building, Sbis Dining Hall, Chemistry Plaza, Sterling C. Evans Library, Cushing Memorial Library and Archives, Central Campus Parking Garage, Student Computing Center, Engineer Activities Building, Legett Hall, Academic Building, Department of Engineering...

Route Callouts: 10 min 0.5 miles, 10 min 0.5 miles

Map Interface Elements:


- Navigation icons: Home, Car, Transit, Walking, Bicycle, Airplane
- Start: Fish Plaza, College Station, TX 77840
- Destination: Texas A&M University
- Options: Send directions to your phone
- Route 1: via Ross St, 10 min, 0.5 mile
- Route 2: via Ross St, 10 min, 0.5 mile
- Route 3: via Ross St, 10 min, 0.5 mile
- Note: All routes are mostly flat

Which information is missed?

10 min (0.5 mile)



via Ross St
Mostly flat

 Use caution—walking directions may not always reflect real-world conditions

Fish Plaza

College Station, TX 77840

↑ Head east on Ross St toward Military Walk

0.4 mi

↪ Turn right

371 ft

↶ Turn left

23 ft

↪ Turn right

 Destination will be on the right

167 ft

Texas A&M University

400 Bizzell St, College Station, TX 77843

Reality



<https://www.latimes.com/local/lanow/la-me-ln-fix-broken-sidewalks-20140818-story.html>

workflow



Ning, H., Ye, X*, Chen, Z., Liu, T., & Cao, T. (2021) Sidewalk Extraction Using Aerial and Street View Images. *Environment and Planning B*. doi: 10.1177/2399808321995817

An occluded segment of sidewalks was restored using street view images

