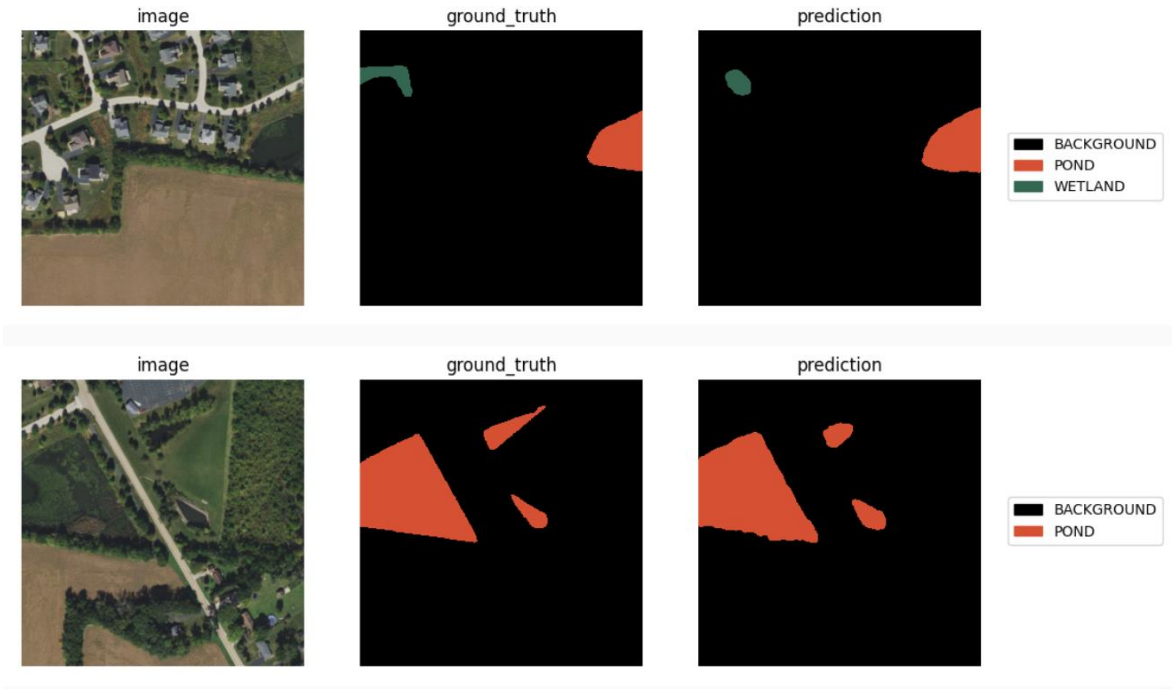
THE UNIVERSITY OF CHICAGO
DATA SCIENCE INSTITUTE

In response to the escalating challenges posed by climate change, the Chicago Metropolitan Agency for Planning (CMAP) partnered with the Data Science Clinic to address the critical need for an inventory of stormwater drainage infrastructure in Northeastern Illinois. The collaborative effort aimed to develop a comprehensive dataset of stormwater infrastructure, essential for strategic planning and resilience-building initiatives.

Leveraging deep learning technology, the team developed a machine learning model to automate the identification process of stormwater infrastructure using aerial imagery. While the model demonstrated good accuracy in predicting bodies of water such as ponds and wetlands, challenges arose in distinguishing other types of infrastructure, particularly dry bottom detention basins, due to their variable appearances.

The project concluded with a strong proof-of-concept model that achieved a 60% accuracy score on a limited set of infrastructure labels and laid the groundwork for future developments. Opportunities for model improvement included incorporating more data, such as elevation data, and exploring pre-trained models tailored to aerial imagery.



Example model outputs, from left to right
(1) Aerial image of the area, (2) Infrastructure shapes from the original dataset, (3) Infrastructure shapes predicted by the model