

Anthony Sutton – MRes in Spatial Data Science and Visualisation CASA, Bartlet, UCL - Dissertation 2018

New Horizons: Exploring London New Build Typology with Convolutional Neural Networks

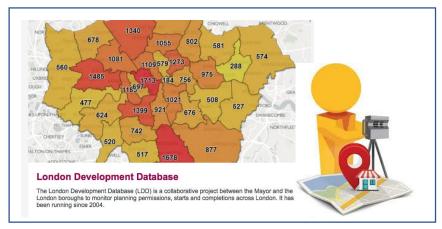


Aim

- Visual Exploration of New London
- Typological Analysis of London New Build
- CNN Image Classification Task on GLAs London Development Database
- Explore a Real-World Machine Learning Analysis Workflow



Method

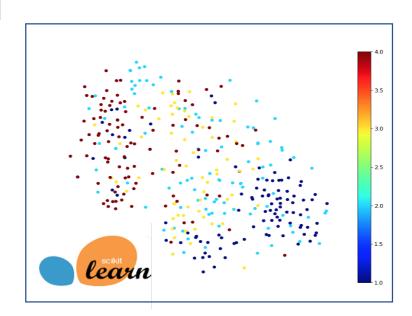


• Data Model: London Development Database & Google Street View

CNN Transfer Learning with

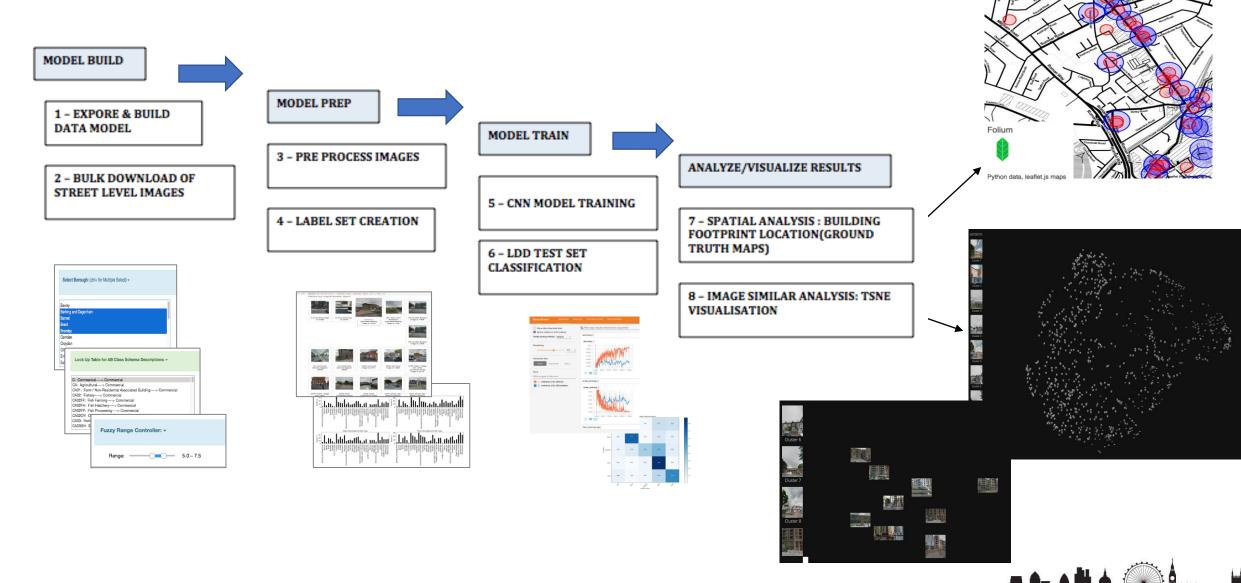


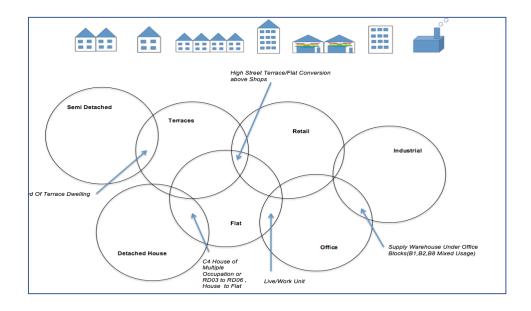
TSNE Sci Kit Learn Image Similar Analysis

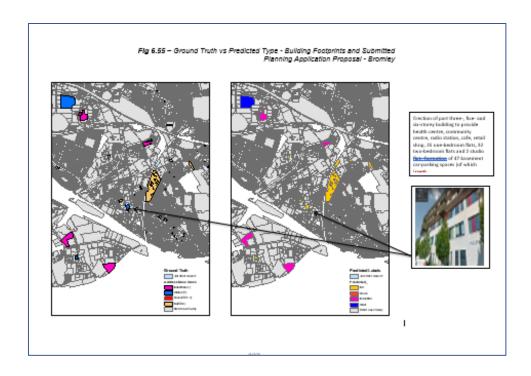




Machine Learning Workflow







Analysis

- Model Overfit Contingency
 - Geo Reference Validation
 - CNN Fine Tuning
 - CNN Blackbox Visualization
- Predominant Types:
 - Mixed Use
 - High Density
 - Private Interface

Lessons Learned & Future Steps

- Cognitive Science: Elegant AI vs Hybrid ML
- Potential Applications: ML Assisted Mapping, Real Time Aggregate Data Solutions for Urban Design & Property Mgmt Problems
- Urban Visual Grammar and Gibson's Ecological Approach

