Artificial Intelligence for Querying Land and Property Data from Cadastral Plans

Hamid Hosseini, Behnam Atazadeh and Abbas Rajabifard (Australia)

Key words: Cadastre; Digital cadastre; e-Governance; Engineering survey; Geoinformation/GI; Land management; Quantity surveying; Tunnel surveying; Keyword 1; Keyword 2; Keyword 3

SUMMARY

Cadastral plans are used in land registration systems for defining legal boundaries of land parcels and properties as well as their associated rights, restrictions, and responsibilities (RRRs). However, existing registered cadastral plans are in 2D non-machine-readable formats and data within these plans are not easily accessible and readily usable, leading to unnecessary delays, disruptions, and costs within land development projects. Artificial intelligence (AI) as an emerging technology has been recognized as one of the operational parameters for advancing land administration systems (LASs) which can offer transformative solutions to overcome traditional approaches. This paper presents a new approach to efficiently retrieve land and property information from cadastral plans, reducing the high cognitive load associated with manual approaches. Our approach's two core functionalities are data extraction from plans using computer vision and communication with plans using natural language processing (NLP). To demonstrate our approach, a prototype chatbot employing generative pretrained transformer (GPT) as the core large language model (LLM) was developed for data querying from plans. Initial testing shows effective handling of semantic queries, while highlighting the need for further refinement and development in handling more specific queries within land administration domain and complex spatial queries.

Artificial Intelligence for Querying Land and Property Data from Cadastral Plans (13013)
Hamid Hosseini, Behnam Atazadeh and Abbas Rajabifard (Australia)

FIG Working Week 2025
Collaboration, Innovation and Resilience: Championing a Digital Generation
Brisbane, Australia, 6–10 April 2025