Automatic map interpretation

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Founded by: Hungarian Scientific Research Found (OTKA T020523)
Phare (HU905.0203 Land Consolidation Project)

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Lifetime from: 1996
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Short description: Scanned cadastral maps have been vectorized, and map objects have been
recognized using graph algorithms and neural network.

Description:
To create a spatial database for some GIS application, it is a big challenge to recognize automatically
all the simple and complex map objects on scanned maps.
In this project a robust map interpretation system – called MAPINT - has been developed to process
Hungarian land register maps (cadastral maps). Processing starts with an affine coordinate
transform, followed by a raster-to-vector conversion generating a raw vector image from the
scanned map. All recognition steps are performed on this raw vector image: segmentation,
recognition of separated and not separated symbols, recognition of more complex objects (buildings
and parcels). Character recognition is performed by a feed-forward back-propagation neural network,
to ensure learning abilities for the system. Finally, the drawing quality is enhanced utilizing the
recognition results.
Interpretation is supported by a special data structure - called DG - ensuring dynamic description of
hierarchical structures of drawing objects. This data structure is an essential part of our concept.
MAPINT has been applied in the Phare Land Consolidation Project supporting the creation of a
Hungarian cadastral information system, recognizing parcel numbers and connecting them with
parcel records stored in an Oracle database.

Publications:
Omaszta Sándor, Szabó József (1999): TAKAROS lehetőségek az EU csatlakozás tükrében. Geodézia
és Kartográfia 1999/6.

An Interpretation System for Cadastral Maps [2], Katona, Endre [3], and Hudra György [4] ,

Katona Endre, Hudra György: Kataszteri adatfeltöltés automatikus térkép felismeréssel.

Schriften, Fachhochschule Karlsruhe, 31 pages.
A Graph Based Data Model for Graphics Interpretation [5], Katona, Endre [3], Graph-Based Representations in Pattern Recognition, October 2009, Volume 5534, Number 5534, Venice, Italy, p.355-364, (2009)

Software:
nincs de lehet

Kategória: Geoinformatics

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http://www.inf.u-szeged.hu/ipcg/projects/map-interpretation

Links: