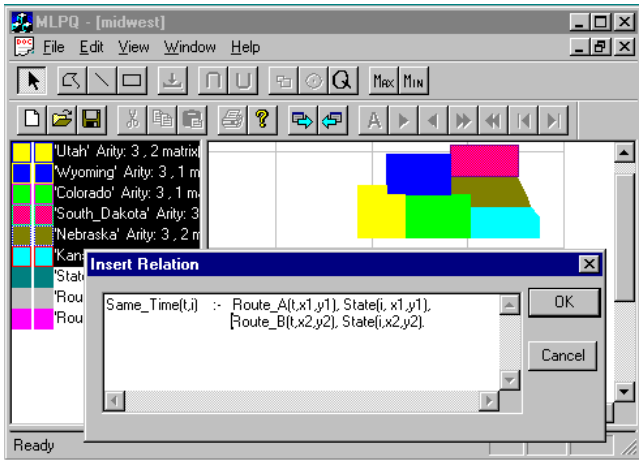
The MLPQ/GIS Constraint Database System*

Peter Revesz, Rui Chen, Pradip Kanjamala, Yiming Li, Yuguo Liu, Yonghui Wang
Dept. of Computer Science, University of Nebraska, Lincoln, NE 68588

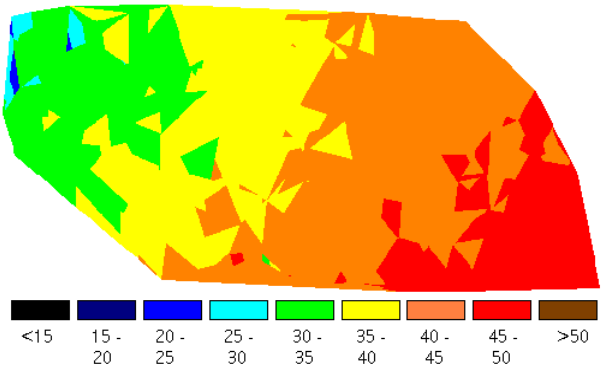
MLPQ/GIS [4,6] is a *constraint database* [5] system like CCUBE [1] and DEDALE [3] but with a special emphases on spatio-temporal data. Features include data entry tools (first four icons in Fig. 1), icon-based queries such as **Intersection**, **Union**, **Area**, **Buffer**, **Max** and **Min**, which optimize linear objective functions, and for **Datalog queries**. For example, in Fig. 1 we loaded and displayed a constraint database that represents the mid-west United States and loaded two contraint relations describing the movements of two persons. The query icon opened a dialog box into which we entered the query which finds (t, i) pairs such that the two people are in the same state i at the same time t.



Supported by NSF grants IRI-9625055, IRI-9632871 and a Gallup Research Professorship.

MLPQ/GIS can animate [2] spatio-temporal objects that are linear constraint relations over x, y and t.

Users can also display in discrete color zones (isometric maps) any spatially distributed variable z that is a linear function of x and y. For example, Fig. 2 shows the mean annual air temperature in Nebraska. Animation and isometric map display can be combined.



References

[1] A. Brodsky, V.E. Segal, J. Chen, P.A. Exarkhopoulo, The *CCUBE* Constraint Object-Oriented Database System. *Proc. ACM SIGMOD*, p. 577-579, 1999.

[2] J. Chomicki, Y. Liu, P. Revesz, Animating Spatiotemporal Constraint Databases. *Proc. STDBM*, p. 224-242, 1999.

[3] S. Grumbach, P. Rigaux, L. Segoufin, The DEDALE System for Complex Spatial Queries. *Proc. ACM SIGMOD*, p. 213-224, 1998.

[4] P. Kanjamala, P. Revesz, Y. Wang, MLPQ/GIS: A GIS using Linear Constraint Databases. *Proc. COMAD*, p. 389-392, 1998.

[5] P. Kanellakis, G. Kuper, P. Revesz, Constraint Query Languages, *JCSS*, 51(1):26-52, 1995.

[6] P. Revesz, Yiming Li, MLPQ: A Linear Constraint Database System with Aggregate Operations. *Proc. IDEAS*, p. 132-137, 1997.