Kristien Ooms - Philippe De Maeyer - Veerle Fack

Abstract

This paper aims to extend current research regarding map users' cognitive processes while working with screen maps. The described experiment investigates how (expert and novice) map users retrieve information from memory that was previously gathered from screen maps. A user study was conducted in which participants had to draw a map from memory. During this task, they were instructed to say out loud every thought that came into mind. Both user groups addressed the same general cognitive structures and processes to solve the task at hand. However, the experts' background knowledge facilitated the retrieval process and allowed them to derive extra information through deductive reasoning. The novices used more descriptive terms instead of naming the objects and could remember less, and less detailed map elements.

Frank Dickmann

Abstract

The linking of printed material to digital forms of interaction, which is currently increasingly being done through the implementation of image recognition software, for example, on smartphones, opens new perspectives for the use of maps. The cartographic integration of Quick Response (QR) codes has turned out to be particularly advantageous for digital information transfer due to the easy creation of QR codes, the broad use of the readers, and the map users' familiarity with QR codes. The example of an edited university site plan shows how paper maps can be thematically enriched by means of QR codes.

Izabela Gołębiowska

Abstract

The legend is a critical tool in reading and interpreting a thematic map. The goal of the study reported here is to understand how the legend works as a map is read. The methodology combined usability performance metrics with the thinking aloud method. Subjects were asked to perform two sets of tasks using two thematic maps with different legend layouts. While latency and accuracy of answers for the first set of tasks did not differ significantly between users of the different layouts, users clearly preferred legends that were simple or familiar. The thinking aloud protocols from the second part of the study revealed different patterns of legend comprehension for each legend design. In addition, the study identified four problem-solving strategies that were adopted by the subjects. Finally, some principles for designing legends were developed from the results of the study.

Legal Issues in Mapping Traditional Knowledge: Digital Cartography in the Canadian North

Teresa Scassa - Nate J. Engler - D. R. Fraser Taylor

Abstract

Digital cartography offers great potential for mapping the traditional knowledge of indigenous communities. This is particularly so because of the close relationship between such knowledge and traditional lands. Yet the mapping of traditional knowledge also raises distinct legal and ethical considerations which should be at the forefront in the design and implementation of indigenous digital cartography projects. This paper examines these considerations through the lens of digital atlases jointly created by Inuit communities and Carleton University's Geomatics and Cartographic Research Centre (GCRC).

Improving Tactile Map Usability through 3D Printing Techniques: An Experiment with New Tactile Symbols

Jaume Gual-Ortí - Marina Puyuelo Cazorla - Joaquim Lloveras-Macia

Abstract

This paper shows an experiment with tactile maps designed for visually impaired persons. Tests were carried out on a tactile map produced with 3D printing and including a new type of tactile symbols, volumetric symbols (3D). These symbols are localized faster than conventional flat relief symbols, with the same error rate, an improvement in the use of these tactile devices. Moreover, following tests, differences were found between types of participants with blind participants generally carrying out the proposed tasks better than the rest of users.

An Ontology of the Submarine Relief for Analysis and Representation on Nautical Charts

Jingya Yan - Eric Guilbert - Eric Saux

Abstract

A nautical chart is a kind of map used to describe the seafloor morphology and shoreline of adjacent lands. One of its main purposes is to guarantee safety of navigation. As a consequence, the construction of a nautical chart follows very specific rules. The cartographer has to select and highlight undersea features according to their relevance to navigation. In an automated process, the system must be able to identify and classify these features from the terrain model. This paper aims therefore to define ontologies of the submarine relief and nautical chart that will be at the root of a model-oriented generalization process. To the best of our knowledge, no ontology has been defined to formalize the geographical and cartographic objects for nautical chart representation. Thus, a bottom-up approach was developed to extract and model knowledge derived from standards established by the International Hydrographic Organization (IHO) and cartographers' expertise. The submarine relief ontology formalizes undersea features describing the submarine relief. Four concepts (composition, morphometric class, shape value and depth value) are introduced to describe properties and relationships between undersea features. The cartographic representation ontology of nautical charts will define several concepts (chart, features, isobathymetric lines and soundings) for the representation of undersea features on the chart.

Feature Definitions in Feature Catalogues

I. Racetin

Abstract

First, an overview of the main terms used in the paper is presented, such as feature catalogue, object, feature, and so on. Then INSPIRE (INfrastructure for SPatial InfoRmation in Europe) Directive, STOKIS (Službeni topografski i kartografski informacijski sustav RH), ATKIS (Amtliches topographisch-kartographisches Informationssystem) and FACC (Feature and Attribute Coding Catalogue) are explained. The main section of the paper refers to the problem of defining features in feature catalogues. Adequate solutions to this problem are offered on the basis of conducted research. An overall

acceptable model for feature definition is offered. The importance of the proposed model for defining features is explained on the feature 'avenue of trees'. The research results are applicable in countries attempting to create their first feature catalogues with the aim of developing a topographic information system, or in those wanting to produce a new edition of their existing feature catalogue. Since the suggested model is included, it can be used for the future development of the INSPIRE feature.

Effective Online Mapping and Map Viewer Design for the Senior Population
Dunja Zupan Vrenko - Dušan Petrovič

Abstract

Geographical information is connected to everyday life in many ways. Web cartography has made geospatial data more available to the public. In the next few years, the average age of the population will be over 51 years, with more than 15% of the population over the age of 65 years. The fact that the senior population is increasing suggests that online mapping and map viewer design should be aware of the senior population's visual restrictions, as well as restrictions of other potential map users, including colour-vision-impaired users. This paper describes the senior population's visual restrictions that can be compared with colour-vision-impaired users and provides guidelines with regard to online mapping and map viewer design for this growing segment of the elderly population.