WORK IN PROGRESS ON CUMINCAD

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This article follows up an earler publication in the ACADIA Quarterly (19:3 2000), in which the intial development of a"Cumulative Index on CAD" is presented.

The First 2000 Entries

First of all the compilation CAAD-related proceedings was tackled. Some proceedings were available in digital form and were supplied by the conference chairs, otherwise plain text-files were created by means of *Optical Character Recognition (OCR)*. More and more conference contributions are provided on-line, thus supporting the continuous supplementation of subsequent conferences. The CADLINE-Database [1] developed under Yehuda Kalay's coordination comprises approx. 1000 records and has been imported into CUMINCAD as well. By the year 2000 a high degree of completeness regarding the published papers related to CAAD was already achieved, particularly in proceedings of the conferences of the worldwide operating CAAD-associations (ACADIA, CAADRIA, ECAADE and SIGRADI). The CUMINCAD-interface allows for expansions. The entry of relevant dissertation and (research-) reports could be envisaged.

Maintenance

Upon registration of CUMINCAD-records in a co-ordinated manner the risk of multiple entries can be kept low. Data protection and copyright principally call for novel reaction mechanisms regarding Internet. E-mail addresses are normally issued with every contribution. As far as copyright is concerned we take for granted that bibliographic data is public and that by publishing the abstract only we are not infringing anyone's right to the full paper. Such is the practice of many organization that collect abstracts of academic work. We provide links to the full text, if available, but the full text is published outside of CUMINCAD and is not our responsibility.

Maintenance of a service like CUMINCAD is much less rewarding than expanding it or adding new features, but must nevertheless be done. For example, Web links and e-mail addresses must be periodically checked if the targets still exist - it is possible to use robot and agent technology to minimize human effort. A listing with all entered e-mail adresses can be easily created for registered users. CUMINCAD also offers an opportunity to send an e-mail by means of this listing resp. any user comments are highly welcomed.

Tools and Platforms Used

CUMINCAD relies on a database engine WODA [2], which is a CGI application written in Perl. Its design goal was to create a smart and simple tool which would allow very rapid creation of small to medium-size database applications which could be used and managed using Web tools. WODA is tightly integrated with Web technology, supports multimedia contents (such as full text articles), file uploads, full text searches and includes software agent technology. WODA can talk to the user in English, German, French, Spanish and Slovene. It has been used locally for an information system (Faculty of Civil and Geodetic Engineering at Ljubljana University), nationally to support Building Center of Slovenia and in several international cooperation projects such as Esprit-SCENIC, Copernicus ATEM, EASY database, the support of an international workshop. Using WODA we have learned that web orientation and rapid prototyping tools can outweigh database features of commercial systems. WODA dynamically generates all Web pages based on the information scheme and nearly 100 customizable parameters, responds to end user queries, allows adding new library items and takes care of the search-agent requests. All it takes to create an application, such as CUMINCAD, with WODA is to define how does the information structure look like. Everything else is done automatically but can be, to a large extent, customized. WODA can also make sure that the data it stores gets indexed by major Web indexing services, such as Lycos or AltaVista. WODA runs on NT and UNIX platforms; at the University of Ljubljana CUMINCAD is served by an HP700 series UNIX workstation.

Future Plans

A complete, maintained collection of records is not the goal in itself, but means a goal which is to simplify and therefore encourage reuse of research results and direct new work into uncharted territories. In other words: not mere collecting is the object (information does not amount to knowledge and data-recording does not amount to information), but the possibility of investigating according to topics is to be provided. This might be of great importance for the next generation of researchers to come. CUMINCAD could also prove invaluable for a reviewing committee and provides the basis for several analyses of the CAAD research, trends, evolution of ideas. Statistical methods, artificial intelligence, automatic concept clustering etc. are techniques that come to mind.

The annual edition (as a CD-ROM portion together with Annual Conference Proceedings) may come in handy regarding off-line utilization. To keep its use as simple as possible and make sure that the CD can be ported to Macs, PCs and UNIX systems the CD will include standard Web data only and anyone with a CD drive (of course) and a Web browser will be able to use it. The search will be implemented in the JavaScript language. The straightforward layout, in which WODA keeps its files, simplifies the creation of mirror sites world-wide. It would, furthermore, make a lot of sense to create a mirror site in the US because the Atlantic is a well-known bottleneck of the Internet.

Keywords so far have only been issued sporadically in the proceedings, the inclusion of which in systematic manner by the editors of the respective proceedings would, however, prove meaningful. The inclusion of "references" – listed at the end of a paper - might prove meaningful, in order to demonstrate their "linkage" and to register the frequency of quotation like in *a Citation Index*, but this is not trivial in terms of work to be performed. Furthermore, a glossary of terms (with definitions) and related works would be of interest. Soon, CUMINCAD will include thousands of records, too much to browse through. We would like to offer „guest-editors" a tool that would let them define annotated subsets of CUMINCAD - selections of best papers with their comments.

Finally, a special potential might result from the idea of a *Model- and Student Work Index resp. Archive*. The volume of digital (re-) construction so far has not been compiled in picture. A group of students analyzing a (famous) piece of architecture may not be able to get hold of possible reconstructions already performed on digital basis. Furthermore, an overview on (extensive) City Models could be of interest. But in what way and how are the findings and materials to be made available to others not directly involved? As already mentioned with regard to CUMINCAD the Internet offers excellent possibilities of making information accessible to a vast public. Provided computer equipment is readily available the expenses accrued particularly result from the actual time consumption.

Conclusions

A fast moving field, such as CAAD, requires responsive indexes of literature in order to allow researchers to „stand on each others' shoulders, instead of stepping on each others' feet". We have proved that using Internet technology and Web-oriented databases allow to create relevant, representative indexes. Because researchers create them themselves and because the effort can be distributed, these indexes may prove more useful to the professional public, than big commercial indexes. A library is an essential infrastructure of any research team. A virtual library, such as CUMINCAD, provides a common library on a global scale. An index, such as CUMINCAD, also provides the basis for further studies about an evolution of a research topic and may influence the future of publishing scientific papers.

References

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COMMENTS ON LOW-POLYGON MODELING

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The readers of this journal no doubt have a strong understanding of the variety and range of modeling and imaging tools available to architects and designers. Clearly the ability to use these tools often requires a substantial time investment to produce usable results. Modeling, constructing scenes, adjusting lights and materials, setting up camera angles and so forth can often amount to several hundred person-hours. Even with the shift to digital media in professional practice, the time required to model and create scenes for presentation purposes not to mention for design study and analysis is frequently not budgeted.

This issue is expectedly more profound for students, who by definition have limited time and resources. For the last several years, I have been exploring an adjustment to our digital modeling pedagogy with regard to skill building exercises. Specifically, to allow for quick study and analysis of design options without a large up-front time investment or the need for substantial skill. Previously I have had students meticulously build models not as much for the digital model as for the three-dimensional thinking and making skills. This term in particular we have been making use of low-polygon models to test and illustrate formal, material and structural properties of design studies. Using low-polygon models in an iterative process, gradually greater detail and information is added so that the model may eventually be used as a finished product for refined renderings, animations and simulations. The use of a crude model for study is obviously nothing new. Architects have previously made extensive use of cardboard, paper, foam, wood, clay and so forth to study initial formal/spatial ideas principally because the materials are inexpensive and can be manipulated somewhat easily. However, the physical study model is limited in its capacity to test materials, transparency and structure quickly, and it's potential as a final presentation product decreases as it is used to test design options.

The use of low-polygon digital models is similarly inexpensive, requiring relatively little time investment to produce usable results. In addition, material mapping and mesh smoothing tools available in many modeling applications makes it possible to realize a tremendous amount of detail in a digital model without explicitly modeling sub components. The mapping of displacements, materials and bumps, and mesh smoothing at the polygon level, allow localized detail to be placed onto a simple low-polygon model to produce conceptually accurate images for decision making and study. Extending the technique's range is made possible by developing an extensive texture and image map library. This method can transform a simple box into a space with structure, material, openings and fenestration within a few minutes and is often sufficient to provide quick feedback for design decision making and further elaboration and iteration.

In addition, for the last several years we have been making extensive use of morphing tools with mapped low-polygon models. This is being done to test the potential of solutions in