

Foreword

This volume contains the proceedings of the 16th British National Conference on Databases (BNCOD-16) held at Cardiff University in July 1998.

The aim of BNCOD is to present new developments and current research on database theory and techniques. Although the title might suggest otherwise, the constituency of this conference in recent years has extended well beyond the UK, indeed beyond European boundaries. This year the programme committee selected eleven papers and several posters for presentation at the conference from a large number of submissions. Of these eleven papers, three are from the UK, five from the European database research community, two from the USA and one from Australia. The programme committee also commissioned one additional UK contribution, in an area of growing industrial relevance.

BNCOD has been held at Cardiff once before, exactly ten years ago. Then, in 1988, at BNCOD-6 the main areas of research interest covered were object-oriented databases, temporal databases, and alternative data models; homogeneous distributed database systems were just beginning to be marketed and their heterogeneous relatives were still primarily a matter for research consideration. The scope and rate of change over the past decade, with the advent of the Internet and World Wide Web, the shift in emphasis from data to knowledge bases and the introduction of intelligent software agent technology into the development of distributed information systems, to name but three major advances, has been nothing short of staggering. Hence the main areas of research interest covered here are very different from those of 1988, as will become apparent.

Now, as then, the BNCOD paper presentations have been complemented by contributions from eminent invited speakers, both of whom on this occasion can boast two prior decades of major achievement in their respective fields of expertise. The first of these, Professor Malcolm Atkinson, to start the conference, reviews progress with providing orthogonal persistence for Java, in terms (mainly) of solid technical successes and residual political/commercial hurdles; his presentation includes a description and demonstration of a freely available operational prototype, PJama. The second, Jeffrey Walker of Tenfold Corporation, from his long experience at the forefront of the database and applications software industry, discusses outstanding productivity in his intriguingly titled presentation on “how to do a five-year applications development project in six months”!

Apart from these two invited keynote addresses and sessions devoted to introducing and viewing posters, the conference has six sessions spread over two days for the presentation of papers. In the first of these, on Middleware, Steiert and Zimmermann describe their JPMQ (Java Persistent Message Queues) system and Stephen Todd of IBM (at the request of the BNCOD programme committee) surveys progress in this important area of development from an industry

standpoint; the session concludes with a Panel Discussion on the merits of middleware.

The second session of papers addresses Life-Cycle aspects of database design. In this session, Griebel *et al.* consider the utilisation of repository technology for supporting design activities, then Preuner and Schrefl discuss the integration of views of object life-cycles in object-oriented database design, with particular relevance to their application in representing business processes.

The third papers session is on Association. It contains two papers: the first, by Omiecinski and Savasere, presents an efficient algorithm for mining association rules within the context of a dynamic database (i.e. where transactions can be added); and the second, by Kurniawati *et al.*, is concerned with improving the efficiency of the nearest-neighbour search operation using the weighted euclidean distance metric by calculating a bounding envelope of the nearest-neighbour query regions directly.

In the fourth session of papers, on Images, Nes and Kersten present their Acoi¹ query algebra for image retrieval systems, then Speegle *et al.* describe the meta-structure aspects of a method based on space-saving transformational representations to support multi-media editing in object-oriented image databases.

Heterogeneity is the subject of the fifth session of papers. Here, Karunaratna *et al.* discuss the establishment of a semantic knowledge base to assist integration of heterogeneous databases by helping users of a loosely-coupled federation of such databases to create views of and determine information available in the federation. This paper is followed by one from Conrad *et al.* which concentrates on an approach to deal with integrity constraints within the process of federated database design.

The sixth and final session of papers is on Languages, and again consists of two papers. The first, by Meredith and King, focuses on the identification of referentially transparent regions or scopes within an experimental variant of the functional database language FDL, called Relief, which is lazy and supports database updates. The second, by Paton and Sampaio, proposes a deductive object query language (DOQL) extension to the ODMG object database standard; DOQL is designed to conform to the main principles of ODMG compliant languages, thus providing a powerful complementary mechanism for use with ODMG databases.

Acknowledgements

As the list of editors indicates, the local organisation of BNCOD-16 has been very much a Cardiff team effort. As a team, we would like to thank the members of the programme committee for their work in reviewing, debating in committee and selecting the papers and posters for presentation at the conference. Special thanks are due to Professor Keith Jeffery for chairing the programme committee

¹ Amsterdam catalogue of images

meeting so effectively. The fact that every review of every paper was submitted in time for that meeting is thought to be something of a record and is to the credit of all the programme committee members. Thanks are also due to members of the BNCOD-15 Birkbeck College (London) organising committee for providing us with information and advice based on their previous year's experience, and for hosting this year's programme committee meeting.

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