First International Conference on Case-Based Reasoning ICCBR-95

The first International Conference on Case-Based Reasoning ICCBR-95 took place October 23-26, 1995 in Sesimbra, Portugal. With over 100 participants from all over the world, it was a continuation and natural next step of the yearly workshops held in the United States since 1988 and in Europe since 1993.

Sesimbra is on the Atlantic coast, just south of Lisbon, and the Hotel in which the conference was, is situated directly above the shore. To make a long story regarding the surroundings short, let me just cite Manuela Veloso opening the conference by saying that it is forbidden to look out of the windows during the conference.

The conference started with a tutorial on Case-Based Reasoning (CBR) by David Leake from Indiana University, USA. Contrasting CBR with other approaches like Rule-Based Systems, Databases and Inductive or Explanation Based Generalization, Leake gave us arguments to answer all those „But isn't that just like ..." type questions, also describing how the different approaches can and should complement each other. He stated that the conference is a milestone for the maturity of the field and its future, pointing out that case adaptation is the next big step that has to be tackled by CBR research. The slides of the talk of David Leake can be found at „http://www.cs.indiana.edu/hyplan/leake/cbr/overview.html" .

The main topics touched during the scientific sessions were similarity (especially variations on the Nearest Neighbor theme), adaptation, and the combination of CBR with other AI approaches. It was very interesting to observe, that most of the papers had some kind of „evaluation of the method" chapter in which they compared the method they proposed with other, existing approaches. Although currently no real benchmarks for similarity evaluation, retrieval quality or adaptation do exist, the urge to validate the developed methods is a sign of a maturing methodology. The papers and posters of the conference can be found in [VeAa95].

Three „distinguished papers" were elected by the program committee: „Reasoning with reasons in case-based comparisons" by Kevin Ashley and Bruce McLaren, „Experiments on adaptation-guided retrieval in case-based design" by Barry Smith and Mark Keane, and „A case-based approach for developing writing tools aimed at non-native English users" by Sandra Aluìsio and Osvaldo Oliveira Jr.

A paper which moved many of the listeners was „CBR for Expertise Relocation in Support of Rural Health Workers in Developing Countries" by E.T.O. Opiyo from Kenya. He described a system with which health workers working in rural areas (not in Europe and not in the States....) can enter the description of the symptoms a patient shows in a hand-held computer and access a central Case-Base with patient and treatment information. I believe that, looking at all the closed-blocks-world problems we have solved so far, this is an application for which it is worth fighting. Isn't there anybody out there who would like to support this project ?

There were four invited talks: „The application of CBR for Troubleshooting Complex Systems" by Michael Manago, „The Market for CBR Applications" by Angelo Maestrini, „The knowledge contained in similarity measures" by Michael Richter, and „Non-Conscious Problem Solving" by Roger Schank.

Michael Manago described the work Acknosoft is doing in cooperation with various companies, especially CFMI, for which they developed a troubleshooting system. The system uses CBR to diagnose faults in Aircraft engines from failure descriptions received from maintenance crews all over the world. I think it would be fair to say that the CBR community definitely needs more people like Manago who „don't do AI but do business" (if Manago does not do AI, I would like to know who does..) with down to earth problems rather than toy problems with closed world assumptions. An important aspect Manago mentioned (and which was raised several times during the conference) was the „business process re-engineering" needed for an application to be successful.

Maestrini from Inference Corporation told us, that today companies invest into customer support in the broadest sense and asked for „customer oriented science". Inference seems to be concentrating on „Help-Desk" and „Front Office" applications of CBR, trying to make the knowledge, which is kept hidden in the back-office, available to the people in contact with the customers.

Michael Richter from the University of Kaiserslautern, Germany, showed that the knowledge contained in CBR systems is distributed in four „knowledge containers". The vocabulary used, the similarity measure, the transformation algorithm, and the cases. While the first three knowledge containers are usually complied, the cases are interpreted at run-time. Stating that we should compile as little knowledge as possible and as much as absolutely necessary, he showed that the similarity measure contains fundamental knowledge regarding the structure of the domain.

The talk of Roger Schank from Northwestern University, USA, was actually scheduled for the morning session on the second day of the conference, but he preferred to switch with Michael Richter and give his talk after lunch. No doubt, Schank is one - or maybe even the - founder of Case-Based Reasoning. So we -the lesser scientists- were all eager to hear his talk. As always, it was very entertaining and thought provoking. He talked about the necessity of making computers conscious and if „thinking" involved consciousness at all. Stating that human beings do solve problems „non-consciously" he argued that „following rules has nothing to do with intelligence" and that the mistake in Artificial Intelligence was the way intelligence was understood. Schank made us re-think many of our beliefs. „Consciousness is useless for intelligence". Cogito ergo dumb ?

Apart from the invited talks and paper and poster presentations, some more or less interesting and successful panel discussions and workshops were „organized". The most interesting, informative and amusing panel was with Michael Manago and David Aha discussing „The role of induction in CBR". While Aha tried to prove, that Induction is an inherent part of CBR, Manago claimed that induction and CBR complement each other. While

both had some convincing arguments, Manago`s view was the one the CBR community felt more comfortable with.

Even if not all panels were as good, the very pleasant atmosphere during the conference as well as the constructive, inspiring and interesting discussions during the breaks and „unofficial meetings" made up for them.

In conclusion it can be said that the conference has shown, that CBR has established itself as a valid and practicable methodology for developing applications. While the euphoria which always surrounds a new approach for a while is no longer that extreme, people working on CBR are still fascinated by the idea. However there are still areas in which extensive research has to be and will be done in the future. Especially the issues regarding adaptation, the connection to database and information retrieval technologies, the organizational changes necessary to launch successful CBR applications, the scalability issue, and (I hate to say it) the knowledge engineering needed are not necessarily trivial. Nevertheless the number of successful real-world CBR applications constantly increases and the feedback from these will help perfecting the methodology. As David Leake put it : „CBR is already a very successful technique, but the best is just to come".

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„Case-Based Reasoning Research and Development, Proceedings, First International Conference on Case-Based Reasoning ICCBR-95, October 23-26, 1995, Sesimbra, Portugal", M. Veloso, A. Aamodt (Eds.), Lecture Notes in Artificial Intelligence 1010, Springer Verlag, Berlin, Heidelberg, New York, 1995