Prospectus

KL-ONE Workshop

Recently we have seen a significant surge of interest in the KL-ONE
knowledge representation language, under development at BBN for several
years [Brachman 78, 79].   Not only have more and more people become
familiar with it, several groups have taken serious enough interest in
KL-ONE to begin either using the BBN implementation in their research or
building smaller versions of the language on their own. Given that an
important contribution to research on KL-ONE will invariably come from
those who attempt to use it in a serious manner, and given the scope of
the various projects now using it and the potential mutual benefit that
all parties might gain through interaction with one another, we would
like to hold a workshop in which we can all get together, discuss the
various projects using (or potentially using) KL-ONE, and investigate
some of the current topics in the language still undergoing extensive
research.

We propose to hold the KL-ONE Workshop during the third week of October,
somewhere in the Northeast (so that people from out of town can fly into
Boston, and so travel expenses for BBN people will be minimal). A
secluded but pleasant location would be best for the purposes of the
gathering, although holding it at BBN is a possibility. We expect that
something on the order of two and a half or three days will be the right
amount of time.

We expect the agenda to include at least the following items:

1. Opening Statement: In this talk, those of us at BBN would
    relate to the non-BBN people a sketch of recent progress here
    on KL-ONE, including both abstract design and implementation.

2. Participating Group Presentations: Each group engaged in a
    significant piece of research involving KL-ONE - either using
    our INTERLISP implementation, an independent one, or working
    on paper - would be given the opportunity to present the major
    features of their work. Sufficient time should be allocated
    for substantial discussion, since most of the groups have been
    quite independent of one another, and will not be familiar
    with each other's work.

3. Prospective Group Presentations: Those who might be
    interested in making serious use of the ideas and/or
    implementation of KL-ONE would be invited to sketch out what
    kind of use they might make of it.   Comments on
    appropriateness and potential problems will be solicited from
    the rest of the group.

4. Current Problems and Trends: Presentation by the BBN group of
    issues of most central concern here, and hints at solutions
    that are moderately worked out. While the intent would not be

to work out detailed solutions en masse, the experience of the various groups would be invaluable in determining future directions. In particular, benefits of the various groups playing off against each other would not be attainable in any other way. The discussion should probably focus on reasoning more than static description.

5. Open Discussions:

  o What should be the central concerns of research on KL-ONE?

  o What does one gain by using an epistemologically well-founded representation over an ad hoc one?

  o Suggestions for alternative conceptions

  o Comparisons with other current research - what is unique about KL-ONE?

Given the already substantial number of people either currently using, or seriously considering using KL-ONE, we would be forced to restrict attendance by invitation only. The primary list of invitees will include the following (in no particular order):

Ron Brachman (BBN)
Rusty Bobrow (BBN)
Bill Woods (BBN)
David Israel (BBN)
Jim Schmolze (BBN)
Frank Zdybel (BBN)
Martin Yonke (BBN)
Norton Greenfeld (BBN)
Bonnie Webber (Pennsylvania/BBN)
Candy Sidner (BBN)
Phil Cohen (BBN)
Brian Smith (BBN/MIT)
Bruce Roberts (BBN)
Jeff Gibbons (Illinois/BBN)
Brad Goodman (Illinois/BBN)
Richard Fikes (Xerox PARC)
Austin Henderson (Xerox PARC)
John Seely Brown (Xerox PARC)
Ben Cohen (Stanford/Xerox PARC)
Mike Dolbec (Stanford/Xerox PARC)
Bill Mark (ISI)
David Wilczynski (ISI)
Bob Lingard (ISI)
Tom Lipkis (ISI)
Michael Freeman (Burroughs)
Henry Leitner (Harvard)
Norm Sondheimer (Sperry Univac)

Nick Palevsky (Harvard/BBN)
Ed Barton (MIT)
Eugene Ciccarelli (MIT)
Hector Levesque (Toronto)
Ralph Weischedel (Delaware)
Jeff Conklin (U. Mass - Amherst)
Don Kosy (CMU)
Bob Englemore (ARPA)
Marvin Denicoff (ONR)
H. Ait-Kaci (Wharton)
Alan Frisch (Rochester)
Jerry Burchfiel (BBN)
Carole Hafner (GMR)
Bill Mann (ISI)
Steve Fickas (ISI)
Dave McDonald (MIT)
Dave Waltz (Illinois)
James Allen (Rochester)
Jack Klovstad
Elliot Soloway (U. Mass - Amherst)
Edwina Rissland (U. Mass - Amherst)
Martha Stone Palmer (Pennsylvania)
Tim Finin (Pennsylvania)
Ray Perrault (Toronto/SRI)
Stuart Shapiro (SUNY Buffalo)
Nick Cercone (Simon Fraser)
Dave Brown (Ohio State/RPI)
Peter Schneider (Toronto)
Marty Epstein (NIH/NLM)
Mark Fox (CMU)

References

Brachman, Ronald J. A Structural Paradigm for Representing Knowledge. BBN Report No. 3605. Cambridge, MA: Bolt Beranek and Newman Inc., May 1978.

_____. "An Introduction to KL-ONE," in Research in Natural Language Understanding: Annual Report (1 Sep 1978 - 31 Aug 1979). BBN Report No. 4274. Cambridge, MA: Bolt Beranek and Newman Inc., 1979.

KL-ONE Workshop

Agenda

Wednesday, October 15, 1980

2:00 PM   Opening Remarks

2:15 PM - Recent Developments in KL-ONE at BBN
 3:30 PM   - Ron Brachman
       - Jim Schmolze
       - Frank Zdybel

3:30 PM - Break
 4:00 PM

4:00 PM - Presentations by Current Users
 5:30 PM   - Rusty Bobrow and Bonnie Webber
       - Bill Mark (with Dave Wilczynski, Bob Lingard,
            and Tom Lipkis)
       - Frank Zdybel (with Jeff Gibbons and Martin Yonke)

6:00 PM - Reception (Cash Bar, Hors d'Oeuvres)
 7:00 PM

7:00 PM   Dinner

[8:30 PM   World Series]

Thursday, October 16, 1980

9:00 AM - Presentations by Current Users
 10:30 AM   and Discussions of Related Issues
     - Candy Sidner, Phil Cohen, and David Israel
     - issues:
       representation of propositions and assertions
       contexts and nexuses
       de re and de dicto beliefs

10:30 AM - Break
 11:00 AM

11:00 AM - Current Users and Issues, cont'd.
 12:00   - Mike Freeman and Henry Leitner
     - issues:
       belief contexts
       controlling granularity of description
       nexus types
       message-passing

12:00 Noon - Free Time
 6:00 PM

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6:00 PM -    Dinner
   7:30 PM


7:30 PM -    Presentations by Prospective Users
   9:00 PM      ✓ Hassan Ait-Kaci and David Oppenheim
                ✓ James Allen and Alan Frisch
                ✓ Bob Bechtal
                ✓ ~~Tim Finin~~ (ill)
                ✓ Bill Mann
                - ~~Larry Masinter~~
                ✓ Rachel Reichman
                ✓ Bonnie Webber   & Eric Mays
                ✓ Ralph Weischedel


9:00 PM -    Break
   9:30 PM


9:30 PM -    Presentations by Prospective Users, cont'd.
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Friday, October 17, 1980


9:00 AM -    Presentations by Current Users
  ~~10:30 AM~~     - Austin Henderson
     NOON          - Dave McDonald
                   - Mike & Henry
11:00 AM/ -   Working Group Discussions
   12:00          a)   Practical considerations group              LARRY
                       - KL-ONE on a VAX?
                       - A KL-ONE Virtual Machine?
                       - Would KL-ONE be more easily implemented in an
                         object-oriented environment?        Candy? Phil?
                  b)   Natural language applications group
                       - Quantification
                       - Belief;   speech acts;   plans        ask Martha
                  c)   Non-natural language applications            Eric
                       - Physics;   thermodynamics                  Henry
                       - Data bases;   implicit monitoring;  changing worlds
                       - Representing programs, systems


12:00 Noon -  Lunch
   1:00 PM


1:00 PM -    Concluding session
   3:00 PM   Reports from Working Group Discussions
             Other issues not previously considered
                  - KL-ONE and logic (and PROLOG)
                  - Inference and matching/unification
                  - "Meta"
                  - User interface questions
                  - Constraints
                  - Analogy
                  - Perspectives and multiple viewpoints
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PHIL JAMES CANDY DAVID MANN TENNANT SHAPIRO "bread stealers"

KRIN Industry

Mike's issues SD's

FIRST (ANNUAL?) KL-ONE WORKSHOP

Christmas Farm Inn
Jackson, New Hampshire
October 15-17, 1980

KL-ONE is a knowledge representation language that has been under
development at BBN for several years. Recently, it has begun to be used
in both its abstract and implemented forms by a number of different
research groups doing work on natural language understanding and
generation, intelligent graphics, intelligent "agents" for interactive
systems, plan recognition, management consulting, office procedures, and
physics. With the size of the community with serious interest in KL-ONE
getting to the point where its participants could begin to share
insights, impressions, and results of their research (not to mention
complaints and bug reports), we thought it was about time we got all of
the members of this community together to meet one another. To this
end, the first KL-ONE workshop was held in October.

The workshop ran from 2:30 PM on Wednesday the 15th to about 3:00 on
Friday the 17th. It was conducted informally, with emphasis on
interested parties getting to know each other and catch up on the latest
developments at BBN. Interlaced with free time and lots of animated
discussion, we had the following technical contributions:

   o reports from seven groups who have done substantial research
      dependent in some way on KL-ONE;

   o presentation of some recent research on the representation of
      contingent facts (KL-ONE's previous emphasis had been strictly
      definitional description-formation), propositions, defaults,
      and necessary, but not sufficient (natural kind), descriptions;

   o presentation of some technical details of Role Differentiation
      and Modification;

   o and brief introductions from seven groups who are seriously
      considering using KL-ONE in their current research.

We also had time for several open discussions which, among other things,
covered the representation of belief, the representation of
"time-varying role-dependent entities", KL-ONE and PROLOG, knowledge
representation in industry, and implementation issues (e.g., KL-ONE and
object-oriented programming, KL-ONE on a VAX).

Our 47 participants did a great job of keeping things lively yet
serious, and we look forward to further contributions to the language
from this broadening user community. We are still in the process of
compiling a mailing list of the KL-ONE User Community; if you are
interested, please contact me at the following address:

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