On Competitions, Building Labs, Specialization and Robot Integration

David P. Miller

KISS Institute for Practical Robotics
10719 Midsummer Drive
Reston, VA 20191
dmiller@kipr.org
Tel: 703.620.0551   FAX: 703.860.1802

A common complaint among AI researchers building automated planners is that no one building robots ever uses their system (and a follow-on comment is often some slightly derogatory remark about the planning capabilities of robots and the people who build them). A similar situation exists for purveyors of image processing software, learning systems, naive physics, representational logics, and to a slightly lesser extent, the creators of most new programming languages.

The people building the robot systems often appear to be doing everything themselves. Their systems, while often functional, usually lack the extensive capabilities found in specialized modules. When it is suggested to them that they make use of these capable special purpose systems, the response is often something like -- I'd like to use their system, but by the time I build the right hooks and scars, it's usually just easier for me to do it myself.

While the incidence of these complaints may have increased in recent years as an absolute number, as a percentage of roboticist to AI researcher interactions the number of complaints has declined. The increase is due to more people doing robotics. The reason for the decline in complaints/robot may be traced to the large number of hands-on robotics labs (for the non-roboticist) and the great increase in robot competitions.

At the 1993 AAAI RBL a number of AI researchers left the lab mumbling something like "Now I see why no one tries to put my [insert AI subspecialty system here] onto their robot. Its hard enough to get the [insert expletive] thing to go towards the [expletive] beacon." This and the similar labs that followed have done a lot to get researchers to look at real data and to try to make their systems much more integrable than in the past.

Similar benefits have arrived from the robot contests. The past five AAAI robot contests have moved from problems that required clever hardware to tasks that require, at the least, good sensor processing and clever hardware, and may even require AI systems. This has forced roboticists to consort with their more traditional AI colleagues not just at conference coffee breaks, but also at the technical sessions, and sometimes even at their labs. Robot performance has skyrocketed in recent years -- and all of the increase cannot be traced just to faster chip speeds. Robot "thought" processes are definitely more capable now then they were just a few years ago.

I further believe that we have a chance to grow a new generation of researchers that is exposed to this integration process of labs and contests before they have to isolate themselves to earn their Ph.D. specialty. With sufficient exposure to this team integration process, it's possible that Ph.D. work may become more integrated and that new AI modules may be built with the hooks and scars to tie the module into a real and functioning system