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Computer Science Thesis Helps Train Firefighters

Viterbi AI project under CREATE auspices speeds simulations

May 25, 2007 —

A former Viterbi School computer science graduate student now has his PhD, and t
development as a way to train firefighters and other responders to fight conflagratio

Viterbi School artificial intelligence expert Milind Tambe and Nathan Schurr (PhD
into being; working directly with the L.A. County Fire Department as it evolved, m
and useful.

The idea was to speed up and make more useful a training simulation. The LAFD h
drills working by hand, but without sophisticated computer tools provided by Tamb
DEFACTO. In one room, a B-team of veteran firefighters would make up a disaster
where trainees would decide where to send equipment and how to responf. They lo
around a map,

The system meant that dozens of top personnel would be tied up for hours. Mobiliz
organizational effort that it was necessary to bring as many trainees as possible into
many that each individual received little experience. "It's so costly to have large ex
Roemer.

DEFACTO totally changed the situation. The B-Team was completely replaced by
artificial intelligence system. Instead of a committee of firefighters, DEFACTO ha
intelligences, "agents.'"

The agents created disaster scenarios, vivid ones, with images and maps. Individual
system,

USC in flames: AI agents create scnearios for conflagrations, then help trainees fight the fictional fires on real city landscapes
view of the University Park campus.

making their own decisions and learning quickly from their own mistakes.

And instead of crude diagrams or pictures, the disaster was visible to trainees in ful
"Omnipresent viewer" system. The advantages are clear, according to the fire depar
"It's a lot more controlled. You can see if you're heading toward a mistake much mo

And agents also worked with trainees proposing responses. Trainees could also gau
reaction scenarios against ones proposed by the system's teams of artificial agents. '
responsibility for strategy to the agents in the system. The agent committees, from t
human interaction."

Why? Schurr said that extensive and repeated work with the system responding to r
small illustrated a curious pattern. Humans did better than small committees of artif
better than larger committees, even when the course the agents' proposed was not th
between the human and the agents resulted in a compromise plan. "Even wrong de
Schurr said.

Tambe

Grad students Janusz Mareck and J.P. Lewis also participated, along with Paul Scer

While CREATE is now focusing exclusively on risk analysis, rather than response,
under development at the University of Maryland, building on the insights. Los An
looking forward to the next crop. "It really tests your decision making," Roemer sai