About winning the Google AI Challenge.

Gabor Melis
Jans Aasman
Artificial Intelligence is here. But it’s nothing like we expected.
If it works, it’s not AI 😊
Can you imagine Web developers thinking about inference?
The Use of Lisp in Semantic Web Applications

Yarden Katz
University of Maryland
MIND Lab
8400 Baltimore Ave.
College Park MD 20742, USA
yarden@umd.edu

James Hendler
University of Maryland
Computer Science Department
College Park MD 20742, USA
hendler@cs.umd.edu

ABSTRACT
The Semantic Web adds a layer of logic and metadata to the current World Wide Web. By utilizing traditional Artificial Intelligence (AI) and Knowledge Representation (KR) techniques for both the construction of new documents and linking of existing ones, the Semantic Web facilitates machine-to-machine (or "agent-to-agent") communication. Lisp's proven reliability and flexibility in AI and KR make it ideal for constructing intelligent Semantic Web applications. In this paper, we survey the current use of Lisp on the Semantic Web, and suggest some potential uses of it in the future. We conclude the paper with descriptions of Lisp in selected Semantic Web projects that demonstrate its strength and usability.

General Terms
Semantic Web, AI, Lisp, Web Services, Reasoning, Planning

1. INTRODUCTION: LISP DOMINATES AI
Lisp's highly dynamic nature and flexible handling of data has established it as the obvious tool choice for many types of complex Artificial Intelligence applications. Additionally, some of the most exciting research in the fields of Description Logics and other Knowledge Representation areas has used Lisp as its vehicle of representation.

Despite its success in those fields, Lisp has not gained widespread popularity in the realm of Web programming. The current arena of web development is dominated primarily by languages such as Perl and Python. Java also plays a significant role in web client/server software.

The popularity of those languages in this domain is legitimate: they are highly portable, fairly easy to learn and most

came into popularity at the same time as the Web, and thus their architecture and supporting libraries/environments were evolving to be more compelling for web-oriented usage. Lisp has reached widespread popularity in programming circles before the Web's existence and therefore followed a different path of development. Although it has been shown that Lisp's unique handling of data structures is equally suitable to process even those non-semantic formats, Lisp has never caught on as a Web language.

As the current Web evolves into the Semantic Web, application developers will require a different set of functionality from their tools. Easy access to text manipulation (e.g., Perl's built-in regular expressions) will no longer be the prime focus of every Web application. Reasoning, planning and formal representation of data will become ubiquitous, standard tasks that need to be performed by agents to fully utilize the new semantic data on the web. Lisp is already capable of providing such functionality as shown from its extensive history in those fields.

We believe that Lisp can, in the Semantic Web application domain, take on the role of both the "behind the scenes engine" (serving as a reasoner or planner, for example) as well as the application interface, or front end. In the little use that it has received in web projects, Lisp conventionally only served the former role, leaving the latter to other languages such as Perl, Python and Java.

2. SEMANTIC WEB LANGUAGES
The World Wide Web Consortium (W3C) is overseeing developments of several Semantic Web languages.

The Semantic Web relies on XML as the basis of its semant
INTERESTS

On a quite different track, I am also responsible for Six, a Hex playing program for KDE that won the gold medal at the 2003, 2004 and 2006 Computer Games Olympiad. Naturally attracted to A.I. related fields I studied and prototyped online recommender systems, trust networks. Participated in the Netflix Prize, came 11th out of 700 in the first Google AI Contest and won the second.