

## The Adventure with Prolog at Adam Mickiewicz University in Poznań – Selected Examples

**Zygmunt Vetulani**  
Adam Mickiewicz University  
Poland  
vetulani@amu.edu.pl

**Jacek Martinek**  
Poznań Technical University  
Poland  
jacek.martinek@gmail.com

**Marek Kubis**  
Adam Mickiewicz University  
Poland  
mkubis@amu.edu.pl

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We started using Prolog at AMU shortly after the return (1984) of the first author from his post-doc traineeship at GIA where he studied Prolog from Alain Colmerauer. From the beginning Prolog was selected as the main tool to develop AI and NLP applications and tools. Some examples follow.

### **POLINT family of parsers and understanding**

Polint stands for name of the family of NL understanding systems used in several language engineering applications. It originated from an extension to Polish of the system Orbis developed (early 1980s) by Colmerauer and Kittredge as a bilingual question answering system (for French and English) (Vetulani, 1984, 1988). Simple localisation to Polish of the initial Orbis appeared ineffective because of free word-order Polish syntax and non-determinism of Prolog-based parsers. Further versions of Polint parsers are dotted with heuristics which explore the lexicon-grammar properties of the system dictionaries. Heuristics, applied at the pre-analysis phase as well as the switches method (Vetulani, 1991, 1994), made Prolog parsers performing in quasi-linear time due to substantial reduction of the search space. This software was first implemented in Prolog II (Marseille) and further continued in Arity Prolog and in SWI Prolog.

### **Expert system with NL competence**

We have designed and implemented in Arity Prolog an expert system for computer-aided processing of art history documents (Vetulani et al., 1993).

### **POLEX based lemmatizer**

POLEX is a morphological dictionary of Polish of over 100,000 lexemes launched by 1997 (ISLRN : 147-211-031-223-4). In 1998 we have implemented (initially in C) the lemmatizer for Polish, further re-implemented in Prolog. Its Prolog implementation is currently being maintained. (New release soon.)

### **GRAMLEX software**

Within the EU project COPERNICUS 621 GRAMLEX EU (1995-1998) we were developing language engineering tools for Polish. Some of them were written in Arity Prolog and published (Vetulani et al., 1998). These are:

- Program for computer-aided extraction of compound terms from a text (EXTRACT)
- Program for structure analysis of dictionary entries (VERBAN)

- Program for lexicon acquisition (NOUNAN)
- Program for extracting *genus proximum* from definitions (NOUNDAN)

### **Emergency system with language competence**

POLINT-112-SMS was a project for the Polish Platform of Homeland Security designed as a tool to help solving emergency situations that may occur at mass events. The language competence and reasoning modules were implemented in SWI PROLOG. Our usage of Prolog in this application will be presented at the LTC17 Demos and Posters Session (Vetulani and Osiński, 2017).

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