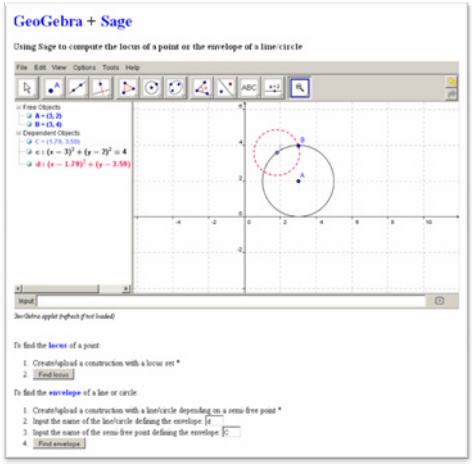
A dynamic symbolic geometry environment based on the GröbnerCover algorithm for the computation of geometric loci and envelopes.

M. A. Abánades, CES Felipe II – UCM, Aranjuez, Spain

F. Botana, U. Vigo, Pontevedra, Spain



http://193.146.36.205:8080/GgbSageDirect/LocusEnvelope/

CICM 2013, 8-12 July 2013, Bath, UK

Math-Net.Ru as a Digital Archive of the Russian Mathematical Knowledge from the XIX Century to Today

CICM Systems & Project 2013

Dmitry Chebukov, Alexandr Izaak, Olga Misurina, Yury Pupyrev, Alexey Zhizhchenko

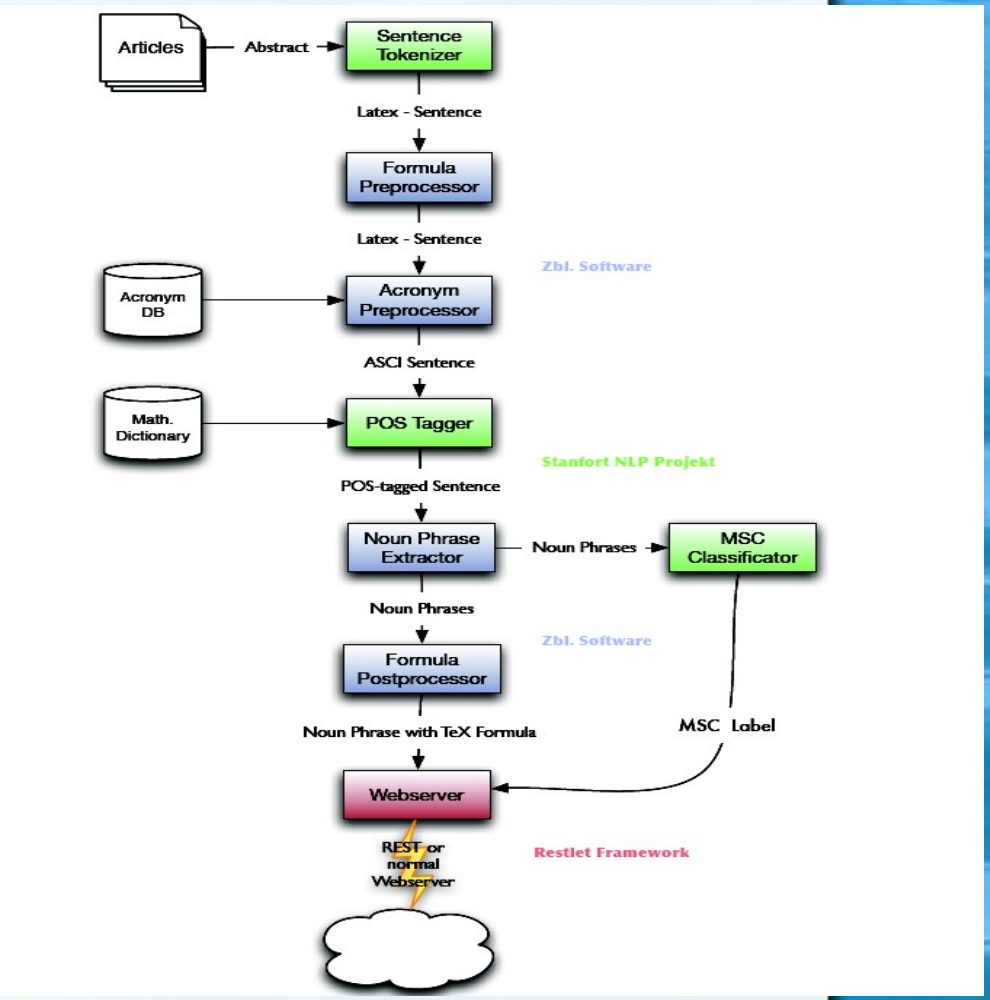
2013-07-09

The DeLiVerMath project: Text analysis in mathematics

Ulf Schöneberg, Wolfram Sperber
FIZ Karlsruhe/Zentralblatt Math

Features of content analysis in mathematics reviewing services :
- abstract/review
- key phrases
- classification

from 1868 until today:
content analysis of mathematical publications has been done mainly manually
– *a time-consuming and cost-intensive Work!*



DeLiVerMATH-project:
text analysis in mathematics
- key phrase extraction and glossary (adapted NLP techniques) and
- classification (Naive Bayes, SVM, Random Forests, …)

LaTeXML 2012 – A Year of LaTeXML

Deyan Ginev[1] Bruce R. Miller[2]

Computer Science, Jacobs University Bremen, Germany

National Institute of Standards and Technology, Gaithersburg, MD, USA

http://latexml.mathweb.org/editor

swMATH – a new information service for mathematical software

S. Bönisch, M. Brickenstein, H. Chrapary, G.-M. Greuel and W. Sperber

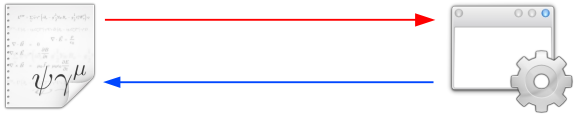
CICM 2013

Project goals

- Creation of a comprehensive database with information on mathematical software
- Combined treatment of mathematical publications and software
- Semi-automatic update tools for reducing manual effort and maintenance costs
- Community integration

The publication-based approach

- Mathematical articles and software are closely interconnected:
  - Publications contain the mathematical knowledge that is needed to build mathematical software (concepts, theorems, algorithms).
  - Mathematical software, in turn, can be used to illustrate new mathematical results and lead to new findings, giving rise to new publications.



- swMATH treats mathematical software and publications in a combined manner:
  - semi-automatic detection of software-relevant articles
  - systematic collection of article references for every software in swMATH
  - collection and evaluation of article metadata to obtain additional information on software

The online prototype

- contains currently ≈5,500 software packages
- **Try it online at CICM 2013!**

http://www.swmath.org

Mathematisches Forschungsinstitut Oberwolfach

FIZ Karlsruhe
Leibniz Institute for Information Infrastructure

ZIB

DFG Research Center MATHEON
Mathematics for key technologies

WIAS

FELIX KLEIN ZENTRUM FÜR MATHEMATIK

Leibniz Association

The Web Geometry Laboratory Project

Pedro Quaresma & Vanda Santos (Univ. Coimbra) & Seifeddine Bouallegue (Univ. Carthage)

An adaptive and collaborative blended-learning Web-environment for Geometry.

Collaborative session — **Construct an Equilateral Triangle**.

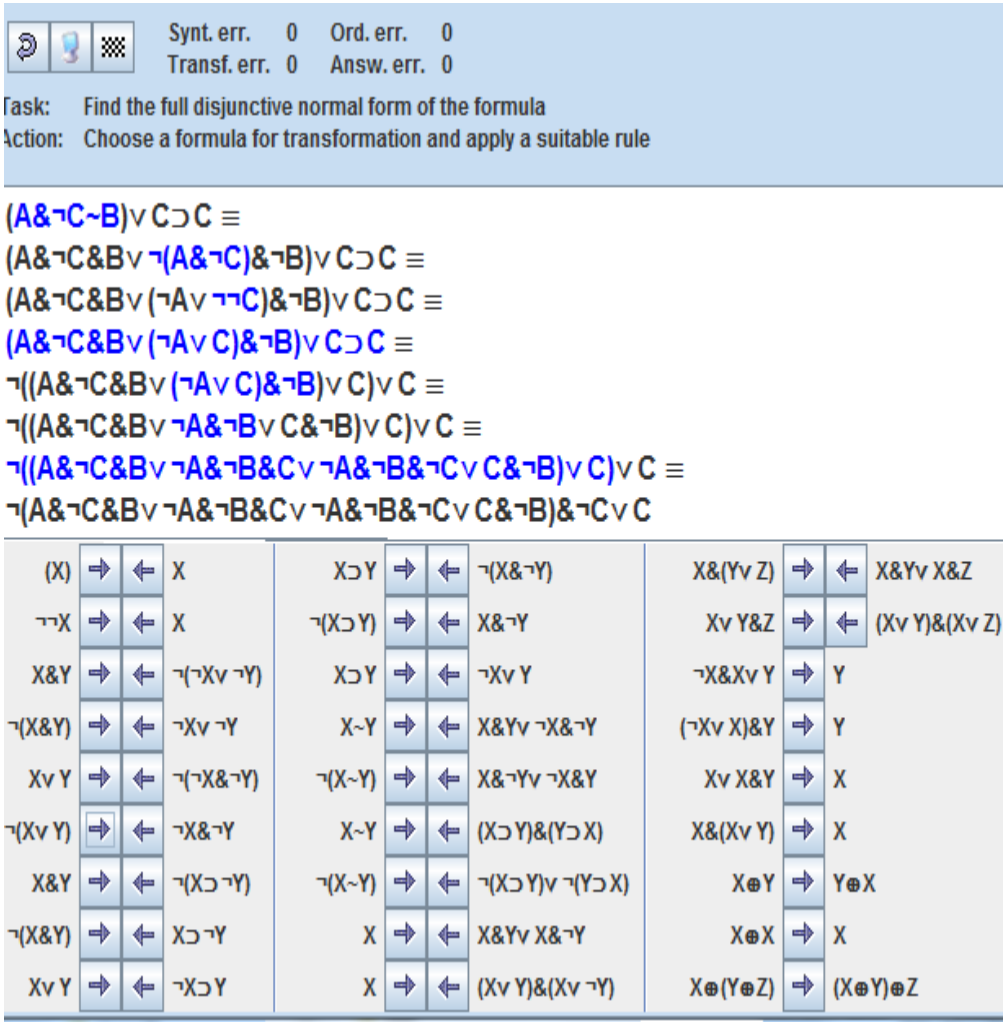
- Using a "ruler" and a "compass";
- Using only a "compass";

Demo:

- Wireless Network `WGLatCICM`;
- WGL server: `http://192.168.10.100/WebGeometryLab/`;
- WGL clients (Java needed): studentA, studentB, ...;

Software for Evaluating Relevance of Steps in Algebraic Transformations

Rein Prank
University of Tartu, Estonia



- 1: Stage 1:»
- Rule applied: 15: biconditional eliminated - OK
- (A&¬C~B)∨C»C
- (A&¬C&B∨¬(A&¬C)&¬B)∨C»C

- 2: Stage 1:»
- Rule applied: 4: Negation into & or ∨
- First eliminate bicond-s and impl-s!
- (A&¬C&B∨ ¬(A&¬C) &¬B)∨C»C
- (A&¬C&B∨ (¬A∨¬¬C) &¬B)∨C»C

- 3: Stage 1:»
- Rule applied: 2: Cancel double negation - OK
- (A&¬C&B∨(¬A∨ ¬¬C)&¬B)∨C»C
- (A&¬C&B∨(¬A∨ C)&¬B)∨C»C

- 4: Stage 1:»
- Rule applied: 13: impl eliminated - OK
- (A&¬C&B∨(¬A∨C)&¬B)∨C»C
- ¬((A&¬C&B∨(¬A∨C)&¬B)∨C)∨C

- 5: Stage 2:¬(
- Rule applied: 21: multiplication of disj-s
- Stage 2 not yet finished (negations into brackets)!
- ¬((A&¬C&B∨ (¬A∨C)&¬B)∨C)∨C
- ¬((A&¬C&B∨ ¬A&¬B∨C&¬B)∨C)∨C

- 6: Stage 2:¬(
- Rule applied: 19: adding variables by rule X->X&Y∨X&7Y
- This conversion belongs to stage 5!
- ¬((A&¬C&B∨ ¬A&¬B ∨C&¬B)∨C)∨C
- ¬((A&¬C&B∨ ¬A&¬B&C∨¬A&¬B&¬C ∨C&¬B)∨C)∨C

MMT is **foundation-independent**:

1. Developer defines new logic
2. MMT yields complete MKM system for it

MMT is **application-independent**:

- No single MMT application
- Instead: focus on data model, interfaces, generic services
- Logical: parsing, type-checking, module system, ...
- MKM: change management, querying, presentation, ...
- Applications developed on top

Formal editing: jEdit-MMT

navigation, hyperlinking,
auto-completion, tooltips, ...

Narrative editing: LaTeX-MMT

formulas processed by MMT –
type-checking, cross-references, ...

Browsing: MMT web server

definition lookup, type inference
theory graphs, ...

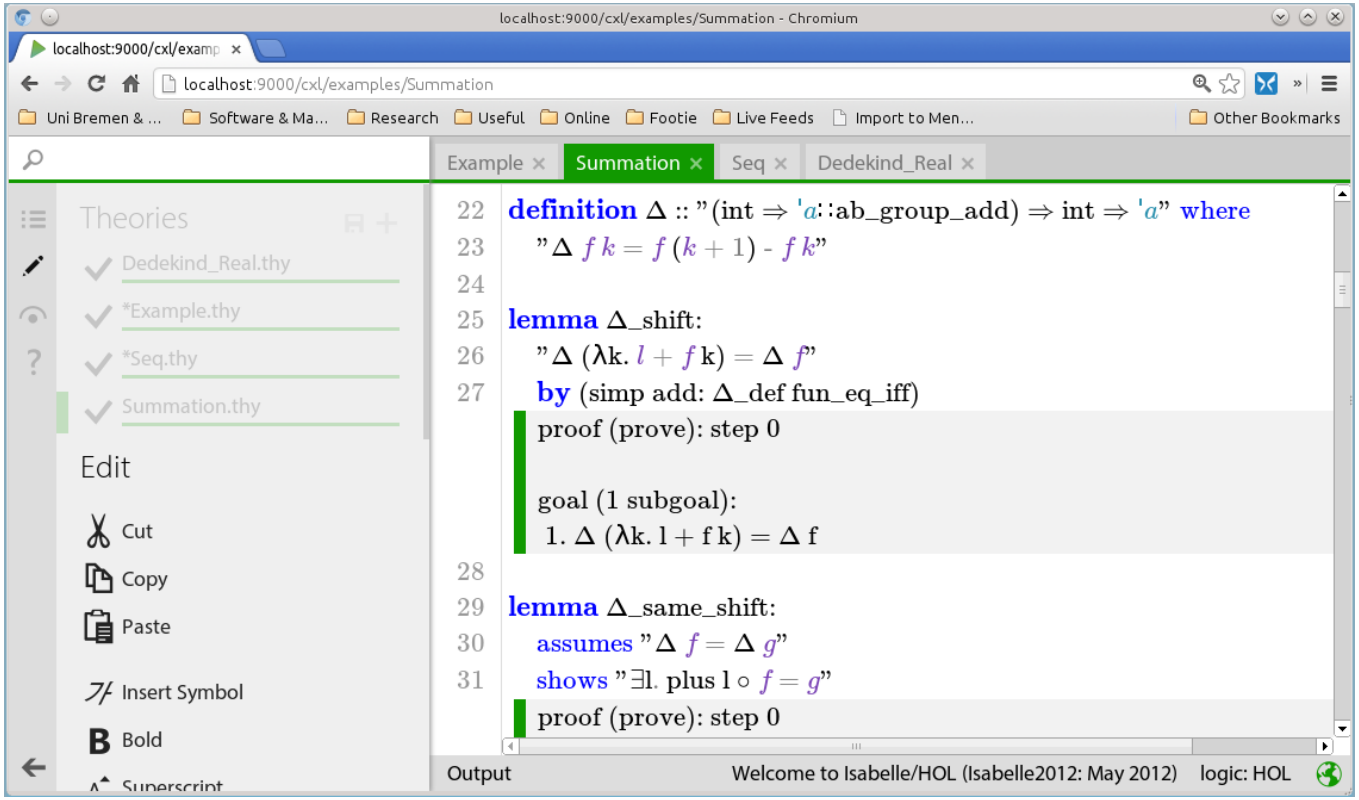
Building: MMT scripting language

easy import/export interfaces
MMT services as build tasks

German Research Center for Artificial Intelligence

A Web Interface for Isabelle: The Next Generation

Christoph Lüth and Martin Ring



Bundesministerium für Bildung und Forschung

ML4PG in Computer Algebra Verification[1]

Jónathan Heras and Katya Komendantskaya

School of Computing, University of Dundee (UK)
http://www.computing.dundee.ac.uk/staff/katya/ML4PG/

CICM 2013 (Systems & Projects track)

[1] Funded by EPSRC First Grant Scheme.

Pervasive Parallelism in Highly-Trustable Interactive Theorem Proving Systems

CICM Systems & Project 2013

Bruno Barras, Hugo Herbelin, Lourdes Del Carmen González Huesca, Yann Régis-Gianas, Enrico Tassi, Makarius Wenzel and Burkhart Wolff

2013-07-09

The ForMaRE Project – Formal Mathematical Reasoning in Economics

CICM Systems & Project 2013

Christoph Lange, Colin Rowat, Manfred Kerber

University of Birmingham, UK
http://cs.bham.ac.uk/research/projects/formare/

2013-07-09