

CoCoALib - Feature #1001

CoCoALib: ideas for student projects

19 Jan 2017 18:05 - John Abbott

Status:	In Progress	Start date:	19 Jan 2017
Priority:	Normal	Due date:	
Assignee:		% Done:	10%
Category:	New Function	Estimated time:	0.00 hour
Target version:	removed/duplicates	Spent time:	0.70 hour
Description			
Collect here ideas for potential student projects based on CoCoALib.			
Related issues:			
Related to CoCoA-5 - Support #242: CoCoA-5 Projects for students (e.g. credit...		In Progress	28 Sep 2012
Related to CoCoA-5 - Feature #368: port SmithNormalForm (CoCoA-4)package to C...		In Progress	11 Jun 2013
Related to CoCoALib - Feature #1667: GBasis over ZZ: port to CoCoALib		In Progress	16 Feb 2022
Related to CoCoA-5 - Feature #1701: Preliminary packages		In Progress	17 Oct 2022
Related to CoCoALib - Feature #1706: slimgb: Brickenstein, singular		New	30 Oct 2022

History

#1 - 19 Jan 2017 18:10 - John Abbott

Here are some ideas:

- write a fn `IsCyclotomic` for univariate polynomials (based on paper by Bradford+Davenport)
- write a fn `IsDegenerate` for univariate polynomials (based on paper by Cipu, Diouf, Mignotte) -- JAA does not like the fn name
- **[already done?]** write code for subresultant (and perhaps some variants?)
- write a simple impl of NLSAT (paper by), perhaps just for the case of 2 indets?
- write a simple impl of Gao-Volny-Wang
- translate QIR code into C++/CoCoALib
- write better impls for certain rings homs (e.g. for verifying correctness of "implicit")
- a fn which produces the simplest non-neg integer matrix giving the same term ordering (perhaps with given `GradingDim`)
- Translate a cocoa-5 function from a package into CoCoALib (see comment 4 below)

#2 - 19 Jan 2017 18:10 - John Abbott

- Related to Support #242: CoCoA-5 Projects for students (e.g. credit F and tesi) added

#3 - 20 Jan 2017 14:28 - John Abbott

Here are some more (weaker?) ideas:

- a fn which produces the simplest non-neg integer matrix giving the same term ordering (perhaps with given `GradingDim`)

#4 - 30 Jan 2017 07:55 - Anna Maria Bigatti

- % Done changed from 0 to 10

Translate a cocoa-5 function from a package into CoCoALib.

- **GCDList** (coclib.cpkg5)

- **FactorUnivariate** (coclib.cpkg5)
- iterators for subsets, permutations (combinatoria.ckg5)
- iterators for tuples and/or cartesian prod? (combinatoria.cpkg5 and list.cpkg5)
- iterator for partitions? (combinatoria.cpkg5)
- ??? (posets.cpkg5)
- RationalPoints.cpkg5
- real root isolation (RealRoots.cpkg5)
- GB over ZZ (prototype-GBZZ.cpkg5)

#5 - 20 Dec 2017 08:47 - Anna Maria Bigatti

- Status changed from New to Closed

copied comments into equivalent issue [#242](#) "Projects for students: crediti F and tesi"

#6 - 20 Dec 2017 08:49 - Anna Maria Bigatti

- Target version changed from CoCoALib-1.0 to removed/duplicates

#7 - 19 Mar 2021 14:56 - John Abbott

- Related to Feature #368: port SmithNormalForm (CoCoA-4)package to CoCoA-5 added

#8 - 18 Feb 2022 16:57 - John Abbott

- Status changed from Closed to In Progress

This issue and [#242](#) cover similar ground.

Suggestion: **split the 2 issues into: ones for CoCoA-5, and ones for CoCoALib.**

#9 - 20 Apr 2022 17:11 - John Abbott

- Related to Feature #1667: GBasis over ZZ: port to CoCoALib added

#10 - 21 Oct 2022 15:51 - Anna Maria Bigatti

- Related to Feature #1701: Preliminary packages added

#11 - 30 Oct 2022 20:30 - John Abbott

- Related to Feature #1706: slimgb: Brickenstein, singular added