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1962-present

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**Constraint-Based System for Genomic Analysis**

Kerdprasop, Nittaya; Kerdprasop, Kittisak. **International Journal of Information and Education Technology** 5.2 (Feb 2015): 119-123.

AB

**Abstract (summary)** [Translate](#)

Recent advent of the new high-throughput biological technologies has brought more challenges to the computer science community in terms of the amount and variety of biological data awaiting for analysis. Computationally intensive techniques such as pattern recognition and machine learning algorithms have been applied to extract knowledge from several biological domains ranging from genomics, proteomics to system biology and evolution process. Learning techniques applied to the computational biology are mostly in the category of classification. Therefore, the sequence analysis problem has to be formulated as classification task, which is quite difficult due to the unobvious one-to-one mapping of the problem. In this paper, we propose a different setting of sequence analysis formulation based on the nucleotide patterns using a constraint logic programming paradigm, in which the sequence alignment can be performed through pattern matching techniques. With available knowledge from the field of pattern mining, we can apply the well-established techniques within the new framework of constraint programming. However, to make the system efficiently work, we need a new set of constraint solver algorithms specifically designed for the sequence analysis problem. The design and implementation of such algorithms are thus the main focus of our research project. We propose in this paper the design of a constraint-based system for genomic sequence analysis including the algorithm for the constraint solver, a major part of the proposed system.

SU

**Indexing (details)** [Cite](#)

<b>Subject</b>	Computation; Design engineering; Classification; Solvers; Biological; Algorithms; Categories; Biology
<b>Title</b>	Constraint-Based System for Genomic Analysis
<b>Author</b>	Kerdprasop, Nittaya; Kerdprasop, Kittisak
<b>Language</b>	English
<b>Document type</b>	Journal Article
<b>Publication title</b>	International Journal of Information and Education Technology
<b>Source details</b>	International Journal of Information and Education Technology. Vol. 5, no. 2, pp. 119-123. Feb 2015.
<b>Volume</b>	5
<b>Issue</b>	2
<b>Pagination</b>	119-123
<b>Page count</b>	5
<b>ISSN</b>	2010-3689

TI

<b>PU</b>	<b>Publisher</b>	IACSIT Press International Association of Computer Science and Information Technology, #07-42, BLK 708, Jurong West, Street 71, Singapore, 640708 ☎ +65-31563599 pubacsit.org <a href="http://www.ijiet.org">http://www.ijiet.org</a>
<b>SFL</b>	<b>Subfile</b>	Electronics and Communications Abstracts (EA); Computer and Information Systems Abstracts (CI)
<b>DOI</b>	<b>DOI</b>	<a href="http://dx.doi.org/10.7763/IJiet.2015.V5.487">http://dx.doi.org/10.7763/IJiet.2015.V5.487</a>
<b>PD,YR</b>	<b>Publication date</b>	Feb 2015
	<b>Date revised</b>	2014-07-01
<b>DREV</b>	<b>Accession number</b>	19767066
<b>AN</b>	<b>Document URL</b>	<a href="http://search.proquest.com/professional/docview/1541412016?accountid=166878">http://search.proquest.com/professional/docview/1541412016?accountid=166878</a>
<b>FAV</b>	<b>First available</b>	2014-06-30
<b>UD</b>	<b>Updates</b>	2014-06-30
	<b>Database</b>	Computer and Information Systems Abstracts (1981 - current)

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Field Name <sup>1</sup>	Field Code	Example	Description and Notes
Abstract	AB	ab("pattern recognition")	Use adjacency and/or Boolean operators to narrow search results.
Abstract present	ABANY	"Bruker Fourier transform spectrometer" AND abany(yes)	Add: <i>AND ABANY(YES)</i> to a query to limit retrieval to records with abstracts.
Accession number	AN	an(19767066)	A unique document identification number assigned by the information provider.  A record can display multiple accession numbers – depending on the products within which it is stored.
All fields	ALL	all("machine learning algorithm*")	Searches all fields in bibliographic files. Use adjacency and/or Boolean operators to narrow search results.
All fields + text	--	"machine learning algorithm*"	Same as ALL field code: searches all fields in bibliographic files.
Author	AU	au(Kerdprasop, Kittisak)	Includes all authors.  See also First author.
First author	FAU	fau(Kerdprasop, nittaya)	First name listed in Author field. It is included in Author browse, but its position cannot be specified in the Author browse.
Corporate author	CA	ca(lockheed OR Marietta)	
Author affiliation	AF	af("notre dame")	Includes data when available, such as department, organization, address, city, state, country, author email, etc.
Cited author	CAU, REF	cau(thomas harris)	Authors of cited works.
Cited document title	CTI, REF	cti(glucose and xylose)	
Cited publication date	CYR, REF	cyr(2009)	
Cited publication title	CPUB, REF	cpub("biotechnology for biofuels")	
Conference information	CF	cf(international P/2 aeronautics) cf(glasgow) cf(sweden) cf(2008)	
Date revised	DREV	drev(>20121231)	Date that the Information provider revised the record.
DOI	DOI	doi(10.7763/IJiet.2015.V5.487)	Digital Object Identifier
Document feature	DF	df(graphs)	Indicates presence in original article of availability of graphics, tabular data, illustrations, etc.
Document title	TI	ti("Constraint-Based System for Genomic Analysis")	Includes Alternate (OTI), but not Publication title (PUB).
Title only	TIO	tio(aeronautic* N/10 "open source")	Searches only the Title, not Alternate title or Subtitle.
Alternate title	OTI	oti(energiedissipation)	Usually the original, non-English title
Document type	DTYPE	dtype("case study")	

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ISBN	ISBN	isbn(9781267839718)	
ISSN	ISSN	issn(2010-3689) issn(20103689)	Also retrieves electronic ISSNs.
Issue	ISS	iss(2)	Also searchable via the Look Up Citation tool.
Journal title	JN	pub(International Journal P/1 Information P/1 Education Technology)	Journal names only. For complete Publication name types, use PUB.  Displays in Publication title.  Also searchable via the Look Up Citation tool for Publication name.
Language	LA	la(english)	The language in which the document was originally published.
Notes	NT	nt(reprint*)	
Number of pages	PCT	pct(5)	
Pagination	PG	pg(119-123)	See also Start page.
Patent application number	PA, PAT	pa("09/523128")	Displays in Patent information
Patent application date	PAD	pad(20101201) pad(2010-12-01) pad(>20101231) pad(20110101-20110630)	Displays in Patent information
Patent application number	PA, PAT	pa("d/372,641")	Displays in Patent information
Patent assignee	AP, PAT	ap(boeing)	Displays in Patent information
Patent publication country	PC, PAT	pc(us)	Displays in Patent information
Patent publication number	PN, PAT	pn(d638085) pn(us d638085)	Displays in Patent information
Publication date	PD	pd(20120726) pd(20120726) pd(>20120630) pd(20120701-20120831)	Also searchable via the Look Up Citation tool.
Publication title	PUB	pub.x("International Journal of Information and Education Technology")	Title of publication where document originally appeared. Also searchable via the Look Up Citation tool.
Publication type	PT, STYPE	pt("scholarly journals")	
Publication year	YR, PY	yr(2012) yr(>2011) yr(2011-2012)	Single year or a range of years may be searched.  Displays in Publication date.
Publisher	PB	pb(IACSIT AND singapore)	
References	REF	ref("patent citation analysis")	
Source type	PT,STYPE	pt("conference papers & proceedings")	Searches references cited in the original document. Also searchable on the Look Up Citation page.
Start page	PAGE	page(119)	Displays in Pagination.
Subfile	SFL	sfl("Electronics and Communications Abstracts") sfl(ea)	The individual database(s) in which the record appears.  Also searchable using two-letter codes.
Subject heading (all)	SU	su("design engineering ") su(computation)	Descriptor terms describing the subject matter of the original record.
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