ENGL 109: Research
Fall 2017

Rebecca Hutchinson
Math, Computer Science and Physics Librarian
The Plan

By the end of class, you will be able to

- Search academic databases effectively
- Obtain journal articles and books relevant to your assignments
- Distinguish between academic and popular material
- Use specific criteria to evaluate information

You will also start researching for your assignment
DC Library

- Library Hours: 8am-midnight
- Math/CS Librarian: Rebecca r3hutchi@uwaterloo.ca
- Services:
  - Silent, quiet or group study spaces
  - Research help

- Also in the library
  - Computers
  - Scanners
  - Printers
UW Library Website

LIBRARY

FIND & USE RESOURCES  SERVICES  ABOUT THE LIBRARY  ASK US

All  Books  Articles  Library web pages  FAQ

Find books, articles, databases, library web pages and more
Search

Library catalogue

HOURS AND LOCATIONS

Fri, Sep 1, 2017

Dana Porter Library (LIB)
08:00 AM-05:00 PM
519-888-4567 ext. 84883
Location | Floor plans

Davis Centre Library (DC)
08:00 AM-05:00 PM
519-888-4567 ext. 36913
Location | Floor plans

Musagetes Architecture Library (ARC)
09:00 AM-04:30 PM
519-888-4567 ext. 27607
Location

Detailed calendars  Services & exam hours

QUICK LINKS

Research guides by subject
My library account
Course reserves
Book a study room
Get access from anywhere

EVENTS

AUG 25
‘Off hours’ exhibit: Karen Davidson
This is an all day event!

Detailed calendars  Services & exam hours

INFORMATION FOR

Undergraduate students

NEWS

Science Literacy Week - Sept 18 to 24, 2017
Here is how we are celebrating at the University of Waterloo.

View all events
Access Online Resources from Home or Off Campus

Off-campus access: You might need to log in to access all resources. More information

Connect from Home

Login for Remote Access to Resources

University of Waterloo WAT CARD

Pounce 000001957 UW Mascot

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To use this feature login with your barcode (no space) and last name. For your security click end session when finished. Your card may look different from the one displayed.

Please enter your LAST NAME: 

Please enter your patron BARCODE NUMBER: 

Login

Commercial Use of Library Resources is strictly prohibited.

Having Problems? -- Please use our form to report them.

What Is This?

If you need an explanation of this login page or help connecting from off campus, please consult our Connect from Home - Helpful Information.
University Level Research

Finding information to answer questions, discuss differences, identify gaps, determine importance
Brainstorm
Search a database
Ask experts
Work backwards
Define what you are looking for
Mind map
Explore
Google
Talk to friends
Search a database
Evaluate
Read studies based on the scientific process
Google (all types of publications)

- Simple search
- Ranks results by relevance
- Finds a lot of information of varying quality
- Need excellent evaluation skills
Popular Articles and Websites

- Written to inform the general public and to entertain
- Found in newspapers, magazines, Google
- May have advertisements
- Not peer-reviewed
Find and Use Quality Information

Relevance
- Is the information important?
- Who is the intended audience?

Authority
- Who is the creator or author? What are their credentials?
- Who is the publisher or sponsor? Are they well known and trusted?

Date
- How recent is the information? How recently has the website been updated?
- Is it current enough for your topic?

Appearance/Accuracy
- Is the information presented in a professional/academic manner?
- Does the creator provide references or sources for data or quotations?
- What is the evidence? Is it misrepresented in any way?
- Is the analysis complete? Are the conclusions logical?

Reason
- Why did the author(s) publish this information?
- Is it biased? Is it opinion?
- Is the creator/author trying to sell you something?
- Is this a research study? Does the author cite their methods?

Journal Articles

- Published in journals
- Written by expert researchers
- Written for scholars
- Peer reviewed
  - Articles are submitted for publication and then examined and critiqued by specialists in the field
- Contain
  - Abstract, methods, results, bibliography/references

A stochastic approach to marine reserve design: Incorporating data uncertainty

Talia Beech, Michael Dowd, Chris Field, Bruce Hatcher, Serge Andréfouët

Article history:
Received 19 January 2007
Received in revised form
24 April 2008
Accepted 1 September 2008

Keywords:
Marine reserve design
MPA
Decision support
Data uncertainty
Optimization
Markov Chain Monte Carlo
Integer programming
Metropolis–Hastings algorithm
Bootstrap
Remote sensing
Coral reefs
Landsat-7

ABSTRACT

Marine reserves, or protected areas, are used to meet an array of biodiversity and conservation objectives. The design of regional networks of marine reserves is concerned with the problem of where to place the marine protected areas and how to spatially configure them. Quantitative methods for doing this provide important decision support tools for marine managers. The central problem is to balance the costs and benefits of the reserve network, whilst satisfying the conservation objectives (hence solving a constrained-optimization problem). Current optimization algorithms for reserve design are widely used, but none allow for the systematic incorporation of data uncertainty and its effect on the reserve design solutions. The central purpose of this study is to provide a framework for incorporating uncertain ecological input data into algorithms for designing networks of marine reserves.

In order to do this, a simplified version of the marine reserve design optimization problem is considered. A Metropolis–Hastings random search procedure is introduced to systematically sample the model solution space and converge on an optimal reserve design. Incorporation of the uncertain input data builds on this process and relies on a parametric bootstrapping procedure. This allows for the solution (i.e. the marine reserve design) to be expressed as the probability of any planning unit being included in the marine reserve network. Spatial plots of this acceptance probability are easily interpretable for decision making under uncertainty. The bootstrapping methodology is also readily adapted to existing comprehensive reserve design algorithms. Here, a preliminary application of the algorithm is made to the Mesoamerican Barrier Reef System (the Caribbean Sea) based on satellite-derived and mapped conservation features (from Landsat-7).

1. Introduction

Marine Protected Areas (MPAs) have been established worldwide to conserve and protect highly valued ecosystems such as coral reefs (Agardy et al., 2000). The design and selection of a network of MPAs in physically and biologically diverse areas, taking account a variety of ecological factors such as biodiversity and fisheries (Tubbchen et al., 2003), as well as social and economic considerations (Richardson et al., 2008). Conservation and protection must be balanced against...
How do I start?

Search for "Research guides by subject".
Showing 64 Subjects

Management Sciences

Mathematics

Actuarial Science
Applied Mathematics
Combinatorics and Optimization
Computer Science

ENGL 109&119 for Mathies
ENGL 378
Mathematics
MMT - Masters of Mathematics for Teachers
Pure Mathematics
SPCOM 223: The Library and Research
Statistics (mathematical)
Research Databases

- Choose a database that relates to your topic or search a multidisciplinary database

- Start with the guide subjectguides.uwaterloo.ca/ENGLMATH
### Multidisciplinary research databases

* Not sure where to start? The databases below cover many disciplines including math, life sciences, business, technology, economics, health, medicine, and physical sciences.

* **Scopus**
  Includes subjects such as technology, social sciences, science and engineering.

* **Web of Science**
  Includes subjects such as technology, social sciences, science and engineering.

* **ProQuest databases**
  Search multiple databases at once.

* **EBSCOHost databases**
  Search multiple databases at once.

* **JSTOR**
  Contains many journals focused on math and statistics. Most of these are not current; JSTOR is particularly useful for finding math and math related research from the past 10-50 years.

### Research databases for education, psychology and sociology

* **ERIC**
  Educational Resources Information Center provides extensive access to educational-related literature

* **PsycARTICLES**
  1965-present. Articles on psychology topics. Database of full-text articles from the APA, CPA, and Hogrefe & Huber.

* **Sociological Abstracts**
  Sociology and related disciplines in the social and behavioral sciences

### Research databases for history and biographies

* **History of Science, Technology and Medicine**
  Historic period: 1700-present. Our subscription allows for one user at a time. Please log out when you are finished searching.

* **America History and Life**
  ... includes Canada. Find articles, book reviews, and more.
  Historic period: all

* **Historical Abstracts**

* **Encyclopedia of Mathematics & Society**
  The encyclopedia looks at the effect of mathematics on hundreds of everyday topics. Includes some biographies.

* **Biographies**
  A list of electronic biography resources available from Waterloo Library.
Searching Research Databases

How can machine learning algorithms be used to analyze large ecological datasets?

Do not search like Google!
Authors may not use the same phrase...

**Biodiversity and algorithmic formula:** Understanding and future research

**Predicting the spread of aquatic invaders:** Insight from data of 200 years of invasion by zebra mussels

You will only find useful articles if you create a good search strategy

- Isolate main concepts
  - usually nouns
- Think of synonyms
Creating a Search Strategy

How can machine learning algorithms be used to analyze large ecological datasets?

- Algorithms, machine learning, model
  - Prediction, simulation
- Ecology, nature, biodiversity
  - Disease, invasive species
- Data, dataset, multivariate
Creating a Search Strategy

- AND to combine concepts, include all of the words
- OR to combine synonyms, include any of the words
- Use * to search for different endings of one word
- Use " " to search for a phrase, all words in order
Creating a Search Strategy

(algorithm* OR “machine learning” OR predict* OR simulat*)

AND

(biodiversity OR “invasive species”)

AND

(data* OR multivariate)
Research Databases: Articles

ENGL 109&119 for Mathies: Find Articles

This guide is designed to help Math students in ENGL 109 and ENGL 119 conduct research for their assignments.

Scholarly vs. popular articles

Video (3:11)

Multidisciplinary research databases

Not sure where to start? The databases below cover many disciplines including math, life sciences, business, technology, economics, health, medicine, and physical sciences.

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Research databases for history and biographies

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  Historic period: 1700-present. Our subscription allows for one user at a time. Please log out when you are finished searching.

- America History and Life
  ... includes Canada. Find articles, book reviews, and more. Historic period: all

- Historical Abstracts
  Includes Canada

- Encyclopedia of Mathematics & Society
  The encyclopedia looks at the effect of mathematics on hundreds of everyday topics. Includes some biographies.

- Biographies
  A list of electronic biography resources available from Waterloo Library.
- Search the ‘Abstract’
- Limit to Scholarly/Peer-reviewed/Academic articles
- Sort results by relevance
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<th>Document title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>1 The application of predictive modelling of species distribution to</td>
<td>Rodriguez, J.P., Brotos, L.,</td>
<td>2007</td>
<td>Diversity and Distributions</td>
<td>146</td>
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<td>biodiversity conservation</td>
<td>Bustamante, J., Secane, J.</td>
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<td>13(3), pp. 243-251</td>
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<td>2 Regional databases within invasive plant species spread monitoring</td>
<td>Vadim, P., Tattiana, R.</td>
<td>2014</td>
<td>Advances in Environmental</td>
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<td>Biology 8(13), pp. 197-200</td>
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<td>and, if so, is it adaptive? A meta-analysis</td>
<td>Nicotra, A.B.</td>
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<td>4 Improved logistic regression approach to predict the potential</td>
<td>Chen, H., Chen, L., Albright, T.P.</td>
<td>2006</td>
<td>Proceedings - IEEE International Conference on Data Mining, ICDM 4063749, pp. 873-877</td>
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<td>distribution of invasive species using information theory and frequency</td>
<td>Guo, Q.</td>
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<td>statistics</td>
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<td>5 Predicting the suitable habitat of the invasive Xanthium Strumarium L</td>
<td>Chikuruwo, C., Masocha, M.,</td>
<td>2017</td>
<td>Applied Ecology and</td>
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Get it! @ Waterloo

- Links to Full text online, if available
- See if we have it in print in the library
- Article order from Scholars Portal (RACER form)
Catalogue: Books

ENGL 109&119 for Mathies

This guide is designed to help Math students in ENGL 109 and ENGL 119 conduct research for their assignments.

Find Books

Use the Library catalogue to search for print books and electronic books. Be sure to search under the Books+ tab. You can also search individual E-Book Collections to find electronic books.

Not finding what you're looking for? Don't be so specific, search for a broader term within your topic. For example, if you're looking for a specific mathematician but don't get any results when you search their name, search for 'Mathematicians' under the 'subject' instead. There may be a book that talks about this person and their work even though their name is not in the title.

E-book Collections

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- **CRCnetBASE COMPUTER-SCIENCEnetBASE**
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- **Safari Tech eBooks**
  Access to a subset of this collection of more than 19,782 books, guides, and videos. Full-text titles on computer languages, operating systems manuals, technology, digital media, business, etc.

- **Scholars Portal Ebooks**
Catalogue: Books

Online access is restricted. See Locations & Requests tab for print

Availability and locations in University of Waterloo

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<th>Location</th>
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Availability and locations in other institutions

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<td>Wilfrid Laurier University Library</td>
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<td>ELECTRONIC RESOURCE - Laurier users only -</td>
<td>Available</td>
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Request Options
Sign in to request
Catalogue: Books

10 Results for Guelph / Laurier / Waterloo

The Life of Benjamin Banneker [by] Silvio A. Bedini.
Bedini, Silvio A.
New York, Scribner c1972 1972
Available at University of Waterloo Library UW Porter. Book Stacks. 6th-10th Floors. (QB36.B22B4 1972)

Where is it?

Locations & Requests Details Reviews & Tags Virtual Browse

Title: The life of Benjamin Banneker [by] Silvio A. Bedini.
Author: Bedini, Silvio A.
Subjects: Banneker, Benjamin. 1731-1806
Publisher: New York, Scribner c1972
Language: English
Creation Date: 1972
Identifier: ISBN:0684125749

Unchained voices an anthology of Black authors in the English-speaking world of the eighteenth century
Expanded ed.
Carrieta Vincent

There are 2 versions

WATERLOO
Showing 1-25 of 582

JOURNAL ARTICLE

Review

Dear Benjamin Banneker by Andrea Davis Pinkney, Brian Pinkney
Review by: The Staff of Chris' Corner Books for Kids & Teens

JOURNAL ARTICLE

Benjamin Banneker: America's First Black Astronomer

Topics: Astronomy, African Americans, Slaves, Family farms, Almanacs
Benjamin Banneker: America's First Black Astronomer

The Journal of Blacks in Higher Education
No. 12 (Summer, 1996), p. 39

Published by: The JBHE Foundation, Inc
DOI: 10.2307/2962965
Stable URL: http://www.jstor.org/stable/2962965
Page Count: 1

Topics: Astronomy, African Americans, Slaves, Family farms, Almanacs

Were these topics helpful?  See something inaccurate?
Let us know!

NEWS AND VIEWS

Benjamin Banneker:
America's First Black Astronomer

At a time when very few African Americans were able to read or write, Benjamin Banneker distinguished himself as one of the nation's foremost astronomers and mathematicians.

Benjamin Banneker was born a freeman in the slave state of Maryland in 1731. His grandmother was an English-born white woman who first freed and then married one of her slaves. The out a 100-square-mile federal district from the Maryland and Virginia countryside. Availing themselves of Banneker's expertise in astronomy, the surveyors used the stars to mark the boundaries. Large stone markers were dragged through the woods and placed at one-mile intervals.

In 1846 the federal government returned the Virginia portion of the district to that state. Today, most of the original markers remain in place.
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<td>Asymptotic formulas in combinatorial analysis</td>
<td>Hardy, G.H.,</td>
<td>1918</td>
<td>Proceedings of the London Mathematical Society s2-17(1), pp. 75-115</td>
<td>368</td>
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<td>Ramanujan, S.</td>
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<td>Asymptotic formula for the distribution of integers of various types</td>
<td>Hardy, G.H.,</td>
<td>1917</td>
<td>Proceedings of the London Mathematical Society s2-16(1), pp. 112-132</td>
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<td>Congruence properties of partitions</td>
<td>Ramanujan, S.</td>
<td>1921</td>
<td>Mathematische Zeitschrift 9(1-2), pp. 147-153</td>
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Your Turn!

Use the guide to get started

1. Create a search strategy for your topic
2. Find a book or peer-reviewed journal article for your assignment