Matthew C. Jadud

Curriculum Vitae

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Education

2007 Ph.D. Computer Science, University of Kent, Canterbury, Kent, UK
Thesis in computer science education research:
An Exploration of Novice Compilation Behaviour in BlueJ
2002 M.S. Computer Science, Indiana University, Bloomington, IN
1998 B.A. Physics, Kenyon College, Gambier, OH

Professional History

2020–Present Innovation Specialist/Consulting Engineer, 18F
2019–2020 Research Associate, Carleton College, Northfield, MN.
2019–2020 Senior Computer Scientist, Applied Research in Acoustics, Culpepper, VA.
2017–2019 Associate Professor and Colony Family Chair
Digital and Computational Studies, Bates College, Lewiston, ME
2016–2017 Associate Professor of Computer Science, Berea College, Berea, KY
2012–2016 Assistant Professor of Computer Science, Berea College, Berea, KY
2008–2012 Assistant Professor of Computer Science, Allegheny College, Meadville, PA
2007–2008 Visiting Assistant Professor of Computer Science, Olin College, Needham, MA
2005–2007 Postdoctoral Researcher (EPSRC DIAS), University of Kent, Canterbury, UK
2002–2006 Teaching Staff, University of Kent, Canterbury, UK
2001–2002 Systems Programmer/Analyst, Indiana University, Bloomington, IN
1998–2002 Associate Instructor, Indiana University, Bloomington, IN

Teaching - Bates College

DCMU s23 Interactive Sound Art (*ST19*)
DCS   102 Design of Computational Systems (*F17,W18*)
DCS   103 People, Place, Prose, and Programming (*F18*)
DCS   202 Nature of Data, Data of Nature (*W18,W19*)
DCS   s13 Community Engaged Computing (*ST18*)
                  F = Fall, W = Winter, ST = Short Term

Teaching - Berea College

GSTR 110 Writing Seminar I: Tradition, Diversity, and Change (*F15*)
CSC   111 Storytelling through Computer Animation (*F13*)
CSC   124 Building Better Apps (*Sp13 w/ Pearce,Sp14x2,Sp15*)
CSC   126 Introduction to Robotics (w/ Pearce) (*F12x2*)
TAD   130 Design and Documentation (w/ Mills, Mahoney, Ma-
                  honey) (*F14*)
TAD   265 Electricity and Electronics (*F12,Sp13,F13,F14,Sp15,2xSp16,F16,Sp17*)
CSC   325 Operating Systems and Virtual Machines (*F13*)
CSC   335 Computer Organization (*Sp13,F14,F15*)
CSC   386 Embedded Systems (*F16*)
CSC   397 Advanced Android Development (*Sp13*)
CSC   412 Networking (*Sp17*)
CSC   420 Programming Languages (*Sp15,Sp17*)
TAD   460 Digital Electronics (*Sp14,F15*)
CSC   486 Open Source Software Engineering (*Sp16*)
GST   490 Entrepreneurship and Hardware Design (*F16*)
CSC   493 Senior Projects (*F15,F16*)

Teaching - Allegheny College

CMPSC	111	Intro to Computer Science I (*F08*)
CMPSC	112	Intro to Computer Science II (*F09,Sp11*)
CMPSC	190	Virtual Worlds and Real Robots (*F08*)
CMPSC	195	Intro to Media Computation (w/ Roos) (*Sp12*)
CMPSC	220	Programming Languages (*F09,F10,F11*)
CMPSC	303	Human Centered Design (*Sp10*)
CMPSC	420	Compilers (*Sp12*)
CMPSC	580	Junior Seminar (*Sp09,Sp10,Sp11,Sp12*)
CMPSC	591	Collaboratory Studio (*Sp12*)
ENVSC	210	Environmental Research Methods (w/ Bowden) (*Sp12*)
FS	101*	British Comedy in Translation (*F09*)
FS	101*	Creativity and Leadership (*F10,F11*)
FS	102†	Technology and Activism (w/ Miller) (*Sp10*)
FS	102†	Making the Future (*Sp11*)

* FS101 ≈ GSTR 110 ≈ First-semester writing seminar
† FS102 ≈ GSTR 210 ≈ Second-semester writing seminar

Teaching - Olin College

ENGR	2510	Software Design (*F07*)
ENGR	3220	Human Factors in Interface Design (*Sp08*)
ENGR	3390	Robotics (w/ Barrett) (*Sp08*)
ENGR	4190	Senior Consulting Program in Engineering (*F07,Sp08*)

Publications

Books

1. M. C. Jadud, C. L. Jacobsen, and A. T. Sampson. *Plumbing for the Arduino*. Creative Commons BY-SA 3.0, 2011. `http://jadud.com/dl/pdf/plumbing.pdf`.

2. S. Fincher and the Computing Education Research Group. *Studying Programming*. (Co-Author Chapters: 5, 10, 16; Author: 8, 11). London, UK: Palgrave Macmillan, 2006.

Peer Reviewed Journal Publications

3. **C.E. Plano⋆**, K. J. Darby, C. L. Shaffer, and M. C. Jadud. Considering Public Transit: New Insights into Job and Healthy Food Access for Low-income Residents in Baltimore, Maryland. *Environmental Justice* (2015).

4. M. M. T. Rodrigo, T. C. S. Andallaza, F. E. V. G. Castro, M. L. V. Armenta, T. T. Dy, and M. C. Jadud. An Analysis of Java Programming Behaviors, Affect, Perceptions, and Syntax Errors Among Low-Achieving, Average, and High-Achieving Novice Programmers. *Journal of Educational Computing Research* **49**(3) (2013).

5. **Michael C. Hughes⋆**, M. C. Jadud, and M. M. T. Rodrigo. String Formatting Considered Harmful for Novice Programmers. *Computer Science Education* **20**(3) (Sept. 2010).

6. M. M. T. Rodrigo, E. Tabanao, M. B. E. Lahoz, and M. C. Jadud. Analyzing Online Protocols to Characterize Novice Java Programmers. *Philippine Journal of Science* **138**(2) (Dec. 2009).

7. M. C. Jadud. A First Look at Novice Compilation Behaviour Using BlueJ (reprinted with commentary). *Annals of Research in Education* **2**(2) (July 2006).

8. M. C. Jadud. A First Look at Novice Compilation Behaviour Using BlueJ. *Computer Science Education* **15**(1) (Mar. 2005).

⋆ Undergraduate research collaborator.

Peer Reviewed Conference Publications

9. M. C. Jadud and B. Dorn. Aggregate Compilation Behavior: Findings and Implications from 27,698 Users. In: *ICER 15: Proceedings of the 10th international workshop on Computing Education Research*. Omaha, NE, USA: ACM, 2015.

10. M. C. Jadud, **Namukaba Hichilo⋆**, **Hatinawedu Mupiwa⋆**, **Logan Ray⋆**, and M. P. Mahoney. The Siren Song of Open Hardware/Software in Wireless Sensor Design. *Journal of Computing in Small Colleges* **29**(5) (May 2014).

11. **Kathryn P. Hardey⋆**, **Eren Corapcioglu⋆**, **Molly L. Mattis⋆**, M. H. Goadrich, and M. C. Jadud. Exploring and Evolving Process-oriented Control for Real and Virtual Fire Fighting Robots. In: *Proceedings of the Fourteenth International Conference on Genetic and Evolutionary Computation Conference*. GECCO '12. Philadelphia, Pennsylvania, USA: ACM, 2012.

12. M. H. Goadrich, M. C. Jadud, and **Jacob Jennings⋆**. Exploring the use of Android OS in CS2. In: *24th IEEE Conference on Software Engineering Education and Training*. Waikiki, Honolulu, Hawaii, May 2011.

13. **Ian Armstrong⋆**, **Michael Pirrone-Brusse⋆**, **Anthony Smith⋆**, and M. C. Jadud. The Flying Gator: Towards Aerial Robotics in occam-π. In: *Communicating Process Architectures 2011*. Ed. by P. H. Welch, A. T. Sampson, J. B. Pedersen, J. Kerridge, J. F. Broenink, and F. R. M. Barnes. June 2011.

14. C. L. Jacobsen, M. C. Jadud, O. Kilic, and A. T. Sampson. Concurrent Event-driven Programming in occam-π for the Arduino. In: *Communicating Process Architectures 2011*. Ed. by P. H. Welch, A. T. Sampson, J. B. Pedersen, J. Kerridge, J. F. Broenink, and F. R. M. Barnes. June 2011.

15. E. S. Tabanao, M. M. T. Rodrigo, and M. C. Jadud. Predicting at-risk novice Java programmers through the analysis of online protocols. In: *ICER 11: Proceedings of the seventh international workshop on Computing education research*. Providence, Rhode Island, USA: ACM, 2011.

16. M. C. Jadud and P. Henriksen. Flexible, reusable tools for studying novice programmers. In: *ICER 09: Proceedings of the fifth international workshop on Computing Education Research*. Berkeley, CA, USA: ACM, 2009.

17. M. M. T. Rodrigo, R. S. Baker, M. C. Jadud, A. C. M. Amarra, T. Dy, M. B. V. Espejo-Lahoz, S. A. L. Lim, S. A. Pascua, J. O. Sugay, and E. S. Tabanao. Affective and behavioral predictors of novice programmer achievement. In: *ITiCSE '09: Proceedings of the 14th annual ACM SIGCSE conference on Innovation and Technology in Computer Science Education*. Paris, France: ACM, 2009.

18. M. C. Jadud, C. L. Jacobsen, and **Jonathan Simpson**⋆. Patterns for programming in parallel, pedagogically. In: *SIGCSE '08: Proceedings of the 39th SIGCSE technical symposium on Computer Science Education*. New York, NY, USA: ACM, Feb. 2008.

19. M. C. Jadud, C. L. Jacobsen, J. Simpson, and C. G. Ritson. Safe Parallelism for Behavioral Control. In: *2008 IEEE Conference on Technologies for Practical Robot Applications*. New York, NY, USA: IEEE, Nov. 2008.

20. **Jonathan Simpson**⋆, C. L. Jacobsen, and M. C. Jadud. A Native Transterpreter for the LEGO Mindstorms RCX. In: *Communicating Process Architectures 2007*. Ed. by A. A. McEwan, W. Ifill, and P. H. Welch. Vol. 65. Concurrent Systems Engineering. Amsterdam, NL: IOS, July 2007.

21. D. J. Dimmich, C. L. Jacobsen, and M. C. Jadud. A Cell Transterpreter. In: *Communicating Process Architectures 2006*. Ed. by P. Welch, J. Kerridge, and F. Barnes. Vol. 29. Concurrent Systems Engineering Series. Amsterdam, NL: IOS, Sept. 2006.

22. C. L. Jacobsen, D. J. Dimmich, and M. C. Jadud. Native Code Generation Using the Transterpreter. In: *Communicating Process Architectures 2006*. Ed. by P. Welch, J. Kerridge, and F. Barnes. Vol. 64. Concurrent Systems Engineering. Amsterdam, NL: IOS, Sept. 2006.

23. M. C. Jadud. Methods and tools for exploring novice compilation behaviour. In: *ICER '06: Proceedings of the second international workshop on Computing Education Research*. Canterbury, United Kingdom: ACM, 2006.

24. **Jonathan Simpson**⋆, C. L. Jacobsen, and M. C. Jadud. Mobile Robot Control - The Subsumption Architecture and occam-pi. In: *Communicating Process Architectures 2006*. Ed. by P. Welch, J. Kerridge, and F. Barnes. Vol. 64. Concurrent Systems Engineering. Amsterdam, NL: IOS, Sept. 2006.

25. C. L. Jacobsen and M. C. Jadud. Towards concrete concurrency: occam-pi on the LEGO Mindstorms. In: *SIGCSE '05: Proceedings of the 36th SIGCSE technical symposium on Computer Science Education*. St. Louis, Missouri, USA: ACM, Feb. 2005.

26. M. C. Jadud. A first look at novice compilation behavior using BlueJ. In: *Proceedings of the 16th Psychology of Programming Interest Group*. Institute of Technology, Carlow, IE, 2005.

27. C. L. Jacobsen and M. C. Jadud. The Transterpreter: A Transputer Interpreter. In: *Communicating Process Architectures 2004*. Ed. by I. R. East, D. Duce, M. Green, J. M. R. Martin, and P. H. Welch. Vol. 62. Concurrent Systems Engineering Series. Amsterdam, NL: IOS, Sept. 2004.

28. M. C. Jadud, B. N. Chenoweth, and **Jacob Schleter**†. Little Languages for Little Robots. In: *Proceedings of the 15th Psychology of Programming Interest Group*. Keele University, Keele, UK, 2003.

29. M. C. Jadud. TeamStorms as a theory of instruction. In: *Systems, Man, and Cybernetics, 2000 IEEE International Conference on*. Vol. 1. New York, NY, USA: IEEE, 2000.

⋆ *Undergraduate research collaborator.*
† *High school research collaborator.*

Supported Scholarship

2019

Design and Development of the Universal Sensor Definition Schema (Co-PI) $139,488

With: Mark Ross, Jason Summers

STTR, NAVSEA

CUE Ethics: A Curricular Design Community for Computing in the Arts (Co-PI) $350,000

With: Manaris, Dilley, Eastman, Jadud, McCauley, Parker

National Science Foundation #1935143

Environmental Sensing, Data Management, and Analysis (Co-PI) $18,060

With: Laura Sewall, Kai Evanson, Phil Dostie

Sherman Fairchild Undergraduate Research Grant, Bates College

2016

Promoting a Growth Mindset Using Automated Feedback (Co-PI) $367,382

With: Stephen Edwards, VT (PI), Manuel Perez Quinones, UNCC (Co-PI)

National Science Foundation #1625425

Transforming our Practice: Race and Identity in the Classroom (Co-PI) $4,000

With: Nancy Gift

Carter G. Woodson Faculty Development Grant

Collaborative Coding Stations (Co-PI) $2,000

With: Scott Heggen

Ed Tech Innovation Grant

Service Learning through Sensor Development (PI) $1,500

Loyal Jones Appalachian Center

2015

Sensing Fracking, Quadruped Gaits, and Counting Cars (Co-PI) $8,100

With: Scott Heggen, Andres Bejarano⋆, Ashley Morgan⋆, Amber Tolleson⋆,
                Kristian Toole⋆, Bria Williams⋆

Berea College Undergraduate Research and Creative Projects

2013

An Open Home Efficiency Monitor (Co-PI) $13,600

With: Mark Mahoney, Namukaba Hichilo⋆,Hatinawedu Mupiwa⋆, Logan Ray⋆

Berea College Undergraduate Research and Creative Projects

2012

Collaborative Design of *Craft of Electronics* (PI) $1,200

With: Mel Chua, Sebastian Dziallas⋆

Berea College Professional Growth Grant

2010

Participating through Video (PI) $3,000

Red Hat POSSE Alumni Programme (in-kind grant)

Exploring Encryption on FPGAs (Co-PI) $1,157

With: Sara Doan⋆

Xilinx University Program (in-kind grant)

A New Interdisciplinary Entry Course in Computer Science (Co-PI) $5,000

With: Robert S. Roos

Allegheny College Demmler Endowment for for Innovative Teaching

Intrinsic Mobile Motivation (Co-PI) $7,700

With: Mark Goadrich

Google Android Education Grant (in-kind grant)

Exploring and Evolving Control for Rescue Robots (Co-PI) $15,500

With: Molly Mattis⋆, Kathryn Hardey⋆, Mark Goadrich

Computing Research Association for Women

2009

Operation: Stick Figure Army (PI) $16,500

With: Stephanie E. Cost⋆, Sara M. Doan⋆

Computing Research Association for Women

2008

An Extensible Firmware for Supporting Parallel-Safe Robotics (PI) $8,000

Institute for Personal Robotics in Education

⋆ *Undergraduate research collaborator.*

Invited Talks, Panels, Posters, and Presentations

2019

March   **Civic Engagement Across the Computing Curriculum**
SIGCSE 2019

March   **Toward an Anti-Racist Curriculum in Computing**
SIGCSE 2019

2018

May   **Choreography, Composition, and Code**
Maine Technology Users Group Annual Summit

March   **It Begins With a Step**
Colony Family Chair Inaugural Lecture, Bates College

2017

November   **Data Management for Intercoastal Sensing**
NeCSA, Schoodic Institute

2017

March   **Engaging Kentucky Undergraduates Through Experiential Education**
Centre College

2016

October   **Engaging with Race and Identity in our Classrooms**
Full General Faculty Meeting

February   **Tradition, Diversity, and Change in Computing Today**
Berea College Student Spotlight Speaker

2015

August   **From Zero to Beginner in 50 minutes**
Berea College Fall Faculty Conference

2014

March   **Home Health Sensing: Undergraduate Research Collaboration**
ITEEA Teaching Technology and Engineering STEM Showcase (poster)

March   **HCI and User Experience Methods in Computing Curricula**
SIGCSE Birds of a Feather Session

2012

March   **Plumbing in Parallel**
Intel Academic Community Lighting Presentation

Invited Talks, Panels, Posters, and Presentations (contd.)

2011

October **Take a Walk in the Commons: Open Source and the Liberal Arts**
Center for Innovative Pedagogy, Kenyon College

September **Flying Gators and Stick Figure Armies**
Computer Science Seminar Series, Union College

July **Modeling Novice Programmer Behavior**
Allegheny College Summer Research Series

March **Learning Through Open Source Participation**
SIGCSE 2011 Panel

2010

December **Parallel Programming on the Arduino**
CSEdWeek event at Hack Pittsburgh

November **Computational Student Research at Allegheny College**
Center for Deciphering Lifes Languages Lecture Series, Hiram College

July **Parallel Programming for Artists and Makers**
O'Reilly Open Source Convention

July **Flying Gators and Stick Figure Armies**
Allegheny College Summer Research Series

May **Open Source in Higher Education**
Open Your World forum, `opensource.com`

March **If _____, you might be a computational thinker!**
ACM SIGCSE Special Session

2009

October **Plumbing for Computing and Art**
Allegheny College Faculty Lecture Series

July **Open Hardware for Teaching and Research**
Allegheny College Summer Research Series

June **Towards Designing Usable Languages**
Invited Talk, USENIX 2009

February **Exploring the Behavior of Novice Programmers**
Invited talk, Colloquium on Computer Science Pedagogy, Carnegie Melon University

2008

October **Designing Usable Languages**
Research in Computer Science Seminar, Allegheny College

2007

April **Runtimes, Robots, and Clusters**
Google Tech Talk

Invited Talks, Panels, Posters, and Presentations (contd.)

2006

March	**ALL YOUR ROBOTS ARE BELONG TO US**
	Invited lecture, Computer Science Dept, University of Copenhagen
June	**Concurrency on and off the sensor network node**
	Workshop on Software Engineering for Ubiquitous Computing

2005

May	**Toys + Motivation = Cool Stuff in Computer Science**
	Invited talk, Higher Education Academy, UK
February	**Old languages never die... they just get reimplemented**
	Departmental colloquium, Computer Science, IU Bloomington

Synergistic Activities

- **Educational videos**
  Develop educational videos to support students in and out of class.
  204K views and 3400 hours watched since September 2012.
  `http://www.youtube.com/user/risersheriff`

- **opensource.com**
  Founding member and contributor to this Red Hat-sponsored community of open source professionals and volunteers.
  `http://opensource.com/users/jadudm`

- **concurrency.cc**
  Responsible for website and primary author of open source book *Plumbing for the Arduino.* Author of *Plumb*, A software development environment for authoring occam-π programs for the Arduino.
  `http://concurrency.cc/`

- **The Transterpreter**
  Core contributor to this virtual machine for executing concurrent and parallel programs on embedded systems.
  `http://transterpreter.org/`

Service

- **Reviewing**

    - Computer Science Education (journal)
    - IEEE Transactions on Education (journal)
    - ACM SIGCSE, ICER (conferences, 2008 - 2020)
    - Communicating Sequential Processes (conference, 2008 - 2017)

- **Webmaster – SIGCSE Technical Symposium**

    - Responsible for web presence for this 1200+ member annual conference. (2014, 2015, 2016, 2017, 2019, 2020)
    - ACM ICER APC (2019)

- **Service – Bates**

    - Chair, Digital and Computational Studies (2017 - 2019)

- **Service – Berea**

    - *Inclusive Teaching Community.* Co-lead of this year-long participatory community for developing new activities and practices to promote inclusion in STEM classrooms. (Fall 2015 – Spring 2016)
    - *Faculty Associate – Center for Teaching and Learning.* Advise and support work in the CTL, with primary focus on integration of internships in the student learning experience. (Fall 2014 – Spring 2015)
    - *Inclusive Learning Community.* Member of this year-long reading group and community focused on transforming individual practice with regards to inclusion along the lines of race and identity. (Fall 2014 – Spring 2015)

- **Committees – Berea**

    - *Infrastructure Advisory Board.* Advises IS&S on planning and decisions infrastructure concerns. (Fall 2014 – Present)
    - *Community Conduct Hearing Board.* The CCHB hears all suspendable nonacademic cases of student misconduct. (Fall 2013 – 2018)
    - *Family Leave.* Ad-hoc committee charged with investigating family leave surrounding adoption and childbirth. (Spring – Fall 2013)

Professional Affiliations and Honorary Societies

- Member of the Association for Computing Machinery

    Special Interest Group in Computer Science Education. (2000 – 2021)