Austin Cory Bart

Curriculum Vitae

PERSONAL DETAILS

Address	411 Smith Hall, 18 Amstel Ave, Newark, DE, 19716
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Title	Assistant Professor

SUMMARY

Assistant Professor studying Computer Science Education. Passionate about teaching and developing technology to support education by leveraging the latest learning theory and computational techniques. Equally comfortable as both Software Architect and Educational Researcher, having developed a significant amount of sophisticated software and taught in many contexts. Committed to supporting education and diversity in every discipline, especially Computer Science. Background in CS and Education.

EDUCATION

PhD. Computer Science 2012-2017
Virginia Tech

Dissertation: *Motivating Introductory Students with Pedagogical Datasets*
Coursework GPA: 4.00

Certification in Learning Sciences 2013-2015
Virginia Tech

4 courses on learning, academic motivation, educational technology, and instructional design.
Coursework GPA: 4.00

Honors Bachelor with Distinction in Computer Science 2008-2012
University of Delaware

Thesis: *Exploring the XO Laptop as a Platform for Encouraging Creative Writing by Children*
Coursework GPA: 3.85

WORK EXPERIENCE

Assistant Professor in Computer Science 2018-present
University of Delaware, Newark, DE

Courtesy Appointment in School of Education

Visiting Assistant Professor in Computer Science 2017-2018
Virginia Tech Computer Science Department, Blacksburg, VA

Undergraduate Teaching Assistant 2011-2012
University of Delaware Computer Science Department, Newark, DE

HONORS AND AWARDS

Nomination for Excellence in Teaching 2020
University of Delaware

Nominated for the prestigious, University-wide Excellence in Teaching Award by former students.

3rd Best Curriculum Issues Paper 2019
SIGCSE 2019
Awarded to the paper considered third best in the Curriculum Issues track by the program committee.

Best CS Education Research Paper 2017
SIGCSE 2017
Awarded to the paper considered to have the Best CS Education Research by the program committee.

Outstanding Graduate TA Award 2017
Virginia Tech Computer Science Department
Awarded to the graduate student who has shown the most exemplary teaching that year.

NSF Graduate Research Program Fellowship 2014-2017
National Science Foundation
A $96,000 stipend given over three years to pursue the student's own graduate-level research agenda. Given to less than 2,000 of the 13,000 submitted applications from PhDs in varying fields across the entire US, and considered one of the most prestigious scholarships offered through the NSF.

XCaliber Award for Excellence in Technology Assisted Teaching and Learning 2016
Virginia Tech TLOS Organization
Received as part of a team with Dr. Dennis Kafura for the creation of a Computational Thinking course for non-majors. The XCaliber award recognizes the application of novel pedagogy and innovative technology in course design across the Virginia Tech community. Includes a $1000 stipend to further develop resources.

Davenport Leadership Award 2015
Virginia Tech Computer Science Department
Virginia Tech Computer Science Department award that annually acknowledges strong academic performance and recognition as a Davenport Leadership Scholar. Also includes a $2000 stipend.

3rd Place in the Graduate Level Student Research Competition 2015
SIGCSE 2015
Competed at the 2015 SIGCSE (Special Interest Group for Computer Science Education) Student Research Competition, winning third place at the graduate level.

NSF Graduate Research Program Honorable Mention 2013
National Science Foundation
Given to less than 2,000 of the 13,000 submitted applications from PhDs across the entire US, this award recognizes a promising application for this prestigious fellowship.

Eugene DuPont Memorial Scholar 2008-2012
University of Delaware Honors Department
Awarded annually to a dozen applicants of the University of Delaware and provides four years of full tuition, housing, dining, books, and an additional research stipend. Recognizes not only academic excellence in high school, but strong extra-curricular involvement.

Citizen of the Year, Upper Division 2011
University of Delaware Residence Life
Awarded by Residence Life at the University of Delaware, one student in the entire upper-class is chosen by their fellow residents to receive recognition for their work in developing community spirit.

Outstanding Sophomore Award 2009
University of Delaware Computer Science Department
This monetary award is given to a student who showed exemplary academic performance in their freshman year. The winner of the award is chosen by the department faculty. Because of equally excellent achievements, I shared the award with my fellow computer science major Diane Kiser.

COURSES TAUGHT

CISC108 - Introduction to Computer Science 2018-Present
University of Delaware, Newark, DE
Instructor - Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021

CISC275 - Introduction to Software Engineering 2021-Present
University of Delaware, Newark, DE
Instructor - Fall 2021

CISC890011 - Colloquium: Computer Science Education 2020-Present
University of Delaware, Newark, DE
Instructor - Fall 2020, Spring 2021, Fall 2021

CISC320 - Introduction to Algorithms 2018-Present
University of Delaware, Newark, DE
Instructor - Fall 2018, Spring 2019, Spring 2020, Spring 2021

CISC357 - Engaging Youth in Computing 2019-Present
University of Delaware, Newark, DE
Instructor - Spring 2019, Fall 2019

CISC374 - Educational Game Development 2020-Present
University of Delaware, Newark, DE
Instructor - Spring 2020

CS1014 - Introduction to Computational Thinking 2014-2018
Virginia Tech, Blacksburg, VA
Instructor - Spring 2017, Fall 2017, Spring 2018; Associate Instructor - Fall 2014

CS1064 - Introduction to Programming in Python 2017-2018
Virginia Tech, Blacksburg, VA
Instructor - Fall 2017, Spring 2018

PUBLICATIONS AND PRESENTATIONS

Conference and Journal Publications

- K. Holsapple, A. C. Bart. Designing Designer: The Evidence-Oriented Design Process of a Pedagogical Interactive Graphics Python Library. SIGCSE'22, Boston, MA. March, 2021.
- J. Harden, L. Gusukuma, A. C. Bart, D. Kafura. A Specification Language for Matching Mistake Patterns with Feedback. SIGCSE'21, Digital. March, 2020.
- A. C. Bart, T. Rutherford, J. Skripchuk. Evaluating an Instrumented Python CS1 Course. CSEDM'20, Digital. July, 2020. (Workshop-level)
- L. Gusukuma, A. C. Bart, and D. Kafura. Pedal: An Infrastructure for Automated Feedback Systems. SIGCSE'20, Portland, Oregon. March, 2020. (33% acceptance; Most prestigious in my field)
- T. Price, D. Hovemeyer, K. Rivers, A. C. Bart, G. Gao, A. M. Kazerouni, B. Becker, A. Petersen, L. Gusukuma, S. H. Edwards and D. Babcock. "ProgSnap2: A Flexible Format for Programming Process Data." ITiCSE'20, Trondheim, Norway, 17-19 June 2020. 2020. (28% acceptance rate; Highly competitive)
- A. C. Bart, A. Sarver, M. Friend, L. Cox, PythonSneks: An Open-Source, Instructionally-Designed Introductory Curriculum with Action-Design Research (won 3rd Best Paper in Curriculum track!), SIGCSE'19, Minneapolis, Minnesota. February, 2019. (37% acceptance, Most prestigious in my field)
- A. C. Bart, C. A. Shaffer, What Have We Talked About?, SIGCSE'19, Minneapolis, Minnesota. February, 2019. (37% acceptance, Most prestigious in my field)
- L. Gusukuma, A. C. Bart, D. Kafura, Misconception-Driven Feedback: Results from an Experimental Study, ICER '18, Finland. August, 2018. (22% acceptance, highly competitive)

- A. C. Bart, E. Tilevich, C. A. Shaffer, D. Kafura, Reconciling the Promise and Pragmatics of Enhancing Computing Pedagogy with Data Science, SIGCSE '18, Baltimore, MD. February, 2018. (35% acceptance, Most prestigious in my field)
- L. Gusukuma, A. C. Bart, D. Kafura, Instructional Design + Knowledge Components: A Systematic Method for Refining Instruction, SIGCSE '18, Baltimore, MD. February, 2018. (35% acceptance, Most prestigious in my field)
- B. Chowdhury, A. C. Bart, D. Kafura, Analysis of Collaborative Learning in a Computational Thinking Class, SIGCSE '18, Baltimore, MD. February, 2018. (35% acceptance, Most prestigious in my field)
- L. Gusukuma, A. C. Bart, D. Kafura, Authoring Feedback for Novice Programmers in a Block-based Language (Position Paper), Blocks & Beyond 2017, Raleigh, North Carolina. October 2018. (Workshop-level)
- A. C. Bart, J. Tibau, D. Kafura, E. Tilevich, C. A. Shaffer, Design and Evaluation of a Block-based Environment with a Data Science Context, IEEE Transactions on Emerging Topics in Computing. May, 2017. (Journal)
- A. C. Bart, J. Tibau, E. Tilevich, C. A. Shaffer, D. Kafura, BlockPy: An Open Access Data-Science Environment for Introductory Programmers, IEEE Computer '17. May, 2017. (Invited)
- A. C. Bart, R. Whitcomb, D. Kafura, A. A. Shaffer, E. Tilevich. Computing with CORGIS: Diverse, Real-world Datasets for Introductory Computing. ACM Inroads 8, 2 (March 2017), 66-72. (Reprint)
- A. C. Bart, R. Whitcomb, E. Tilevich, C. A. Shaffer, D. Kafura, Computing with CORGIS: Diverse, Real-world Datasets for Introductory Computing **(Best Paper Award)**, SIGCSE '17, Seattle, Washington. March, 2017. (30% acceptance, most prestigious in my field)
- A. C. Bart, J. Tibau, E. Tilevich, C. A. Shaffer, D. Kafura, Implementing an Open-access, Data Science Programming Environment for Learners, COMPSAC '16, Atlanta, Georgia. June 10-15, 2016. (18% acceptance, competitive)
- A. C. Bart, E. Tilevich, C. A. Shaffer, D. Kafura, Position Paper: From Interest to Usefulness with BlockPy, a Block-based, Educational Environment, Blocks & Beyond '15, Atlanta, Georgia. October 21-23, 2015. (Workshop-level)
- D. Kafura, A. C. Bart, B. Chowdhury, Design and Preliminary Results From a Computational Thinking Course. ITiCSE'15, Vilnius, Lithuania. July 6-8, 2015. (44% acceptance, competitive)
- A. C. Bart, E. Tilevich, T. Allevato, S. Hall, C. A. Shaffer, Transforming Introductory Computer Science Projects via Real-Time Web Data, SIGCSE '14, Atlanta, Georgia. March 5-8, 2014. (39% acceptance, most prestigious in my field)

Panels and Talks

- A. C. Bart. Is My Course Effective? Data Science Institute 2019. Newark, DE. November 2019.
- A. C. Bart. Curricular Material Packaging Working Group Report. CSSPLICE'19. Minneapolis, MN. February 27, 2019.
- A. C. Bart, K. Subramanian, R. E. Anderson, N. A. Hamid, Preparing, Visualizing, and Using Real-world Data in Introductory Courses, SIGCSE'18, Baltimore, Maryland. February, 2018.
- A. C. Bart, C. A. Shaffer. Instructional Design is to Teaching as Software Engineering is to Programming. SIGCSE '16. Kansas City, MO. March 2-5, 2016.
- A. C. Bart, J. Riddle, O. Saleem, B. Chowdhury, E. Tilevich, C. A. Shaffer, D. Kafura, Motivating Students with Big Data: CORGIS and MUSIC, Splash-E '14, Portland, Oregon. October 21-23, 2014.
- A. C. Bart, E. Tilevich, C. A. Shaffer, T. Allevato, S. Hall, Using Real-Time Web Data to Enrich Introductory Computer Science Projects, Splash-E '13, Indianapolis, Indiana. October 26-31, 2013.

Workshops, Birds of a Feather, and Demos

- A. C. Bart. Let's Learn Algorithms with AlgoTutorBot! An Entire Course as an Educational Escape Room. SIGCSE'22. Boston, MA. March, 2022.
- A. C. Bart, L. Gusukuma, D. Kafura. Authoring Semi-automated Feedback for Python Code with Pedal, SIGCSE'21, Digital. March, 2021.
- T. Price, D. Hovemeyer, K. Rivers, A. C. Bart, A. Petersen, B. Becker and J. Lefever, ProgSnap2: A Flexible Format for Programming Process Data, CSEDM'19, Tempe, Arizona. March, 2019.
- A. C. Bart, P. Conrad, M. Hilton, B. Edmison. The Problem of Packaging Curricular Materials. SIGCSE 2019. Minneapolis, MN. February 2019.
- A. C. Bart, L. Gusukuma, D. Kafura. Pushing My Buttons: Talking about Affordances in Block Interfaces. Blocks & Beyond 2017. Raleigh, NC. October 2017.
- A. C. Bart and D. Kafura. BlockPy Interactive Demo: Dual Text/Block Python Programming Environment for Guided Practice and Data Science (Abstract Only). SIGCSE'17. Seattle, Washington. March 2017.
- E. Tilevich, C. A. Shaffer, A. C. Bart. Creating Stimulating, Relevant, and Manageable Introductory Computer Science Projects that Utilize Real-Time, Large, Web-Based Datasets , SIGCSE'15, Kansas City, MO. 2014.
- E. Tilevich, C. A. Shaffer, A. C. Bart. Creating Stimulating, Relevant, and Manageable Introductory Computer Science Projects that Utilize Real-Time, Web-Based Datasets , SIGCSE'14, Atlanta, GA. 2013.

Posters

- L. Gusukuma, A. C. Bart, D. Kafura, Authoring Feedback for Novice Programmers in a Block-based Language. Blocks & Beyond 2017. Raleigh, NC. October 2017.
- A. C. Bart. Applying Formal Models of Instructional Design to Measurably Improve Learning in Introductory Computing. SIGCSE '16. Kansas City, MO. March 2-5, 2016.
- A. C. Bart, E. M. Bart, Teaching Animal Science with Minecraft: AnimalScienceCraft. GSA Research Symposium at Virginia Tech, Blacksburg, VA, March 2015.
- A. C. Bart, Situating Computational Thinking with Big Data: Pedagogy and Technology, SIGCSE 45th ACM technical symposium on Computer Science Education Graduate Research Poster Competition, Kansas City, MO, March 2015.
- A. C. Bart, E. Tilevich, C. A. Shaffer, T. Allevato, S. Hall, Teaching Computational Thinking with Real-Time Data, Conference on Higher Education Pedagogy, Virginia Tech, Blacksburg, VA, Feburary 2014.
- A. C. Bart, E. Tilevich, C. A. Shaffer, T. Allevato, S. Hall, Transforming Introductory Computer Science Projects via Real-Time Web Data, Graduate Student Poster Symposium, Virginia Tech, Blacksburg, VA, May 2013.
- A. C. Bart, L. Pollock, Wacky Writing: Enhancing the XO Laptop Platform to Motivate Creative Writing by Children, SIGCSE 44th ACM technical symposium on Computer Science Education Graduate Resaerch Poster Competition, Denver, CO, March 2013.
- A. C. Bart, R. Deaton, E. McGinnis, Lowering Development Barriers in Educational Game Design, Conference on Higher Education Pedagogy, Virginia Tech, Blacksburg, VA, Feburary 2013.
- A. C. Bart, G. Sridhara, L. Pollock, V. Shanker, Reverse Engineering from Java Identifier Names: Conventions and a Grammar, Summer Scholars Poster Presentation, University of Delaware, Newark, DE, August 2011.

PROFESSIONAL SERVICE ACTIVITIES

Departmental Committees

- CISC CERAD Committee for Diversity and Inclusivity (University of Delaware, Fall 2020-Present)
- CISC Undergraduate Program Committee (University of Delaware, Fall 2019-Spring 2021)
- CISC Broadening Participation Planning Committee (University of Delaware, Fall 2019-Present)
- CISC Education-enhancing Infrastructure Committee (University of Delaware, Fall 2019-2020)
- CISC Faculty Learning Community on Teaching (University of Delaware, Fall 2019-Present)
- CISC Undergraduate Recruiting (University of Delaware, Fall 2018-2020)
- CISC CT Faculty Recruiting (University of Delaware, Fall 2018-2019)
- CS Undergraduate Program Committee (Virginia Tech, fall 2017 - 2018)

University/College Committees

- Serving in College of Engineering Undergraduate Diversity Working Group (University of Delaware, Fall 2019-Present).
- Serving on Honors Faculty Advisory Board (University of Delaware, Fall 2019-Present).

External Service

- Web Chair for ICER'21
- Volunteer Instructor for Partner4CS at Partner4CS 2019 Summer Workshop for CS K-12 PD of In-service teachers and CS Summit 2019 for Partner4CS (Summer 2019).
- Leading one CSSPLICE Working Group (Curricular Materials Packaging) and serving as member on two others (Programming Snapshot Data and Programming Exercise Representation). (Fall 2017-Present).
- `r/CSEducation` Subreddit Moderator - a major digital CS Education communities (2018-Present).
- Publicity and Web Chair in Organizing Committee (SPLASH 2015 SPLASH-E) - reviewed submissions, organized website, and coordinated emails.
- Digital Education Reading Group Organizer (Virginia Tech, fall 2016 – Present) – Organize and lead reading group meetings for a research group dedicated to Computer Science and Digital Education.
- Association for Women in Computing Webmaster (Virginia Tech, fall 2013 - Present) – Maintained and updated the AWC website, maintained and updated social media presence, organized and supported AWC events.
- CS Graduate Council Webmaster (Virginia Tech, fall 2013 - Fall 2014) – Maintained and updated the Grad Council Website, administered grad council listserv, organized and supported graduate council events, introduced a new system for making graduate student pages indexable and searchable.
- Governor's School for Agriculture - Computer Science elective (Blacksburg, VA Summer 2014 and 2015) – Taught a 1-week class (1 hour per day) on Computer Science to 20 high school students. Adapted our curriculum from the Computational Thinking course I am developing with Dr. Dennis Kafura. Students reported that this was their favorite class at governor's school, and that they were eager to continue learning about Computer Science.
- AWC Code Jam (Blacksburg, VA, Spring 2014) – Led a session on real-time web APIs to 35 undergraduate computer science majors.
- AWC Women in Computing Day (Blacksburg, VA, Spring 2014) – Led a session on solving real-world problems with Computer Science to 60 middle-school girls from around Blacksburg.
- Let's Code Blacksburg! (Blacksburg, VA, Spring 2013 - Fall 2013) – Taught 3 introductory sessions on Python and a class on Pygame to members of the Blacksburg community.
- Senior Fellow (University of Delaware, fall 2011 - Spring 2012) – Planned and hosted a large number of community activities for Honors students. Also advised students on Honors degree progress.

NOTABLE PROJECTS

Pedal Project 2018-Present

https://pedal-edu.github.io/pedal

- Framework to analyze student's code and provide feedback.
- Collection of powerful program analysis tools for type inferencing, sandboxed execution, and AST queries.
- Instructors can incorporate guided feedback to analyze students' code and provide immediate feedback
- Organize, label, and test code for providing students feedback.

BlockPy Project 2015-Present

https://blockpy.com

- A web-based, open-access Python programming environment
- Features a dual block/text editor with mutual language translation – users can switch between the two interfaces at will (separately available at `https://github.com/blockpy-edu/BlockMirror/`)
- Instructors can incorporate guided feedback to analyze students' code and provide immediate feedback via Pedal.
- Data science tools for creating graphs and accessing real-world datasets using simple blocks.

CORGIS Dataset Project 2014-Present

https://think.cs.vt.edu/corgis

- A curated collection of Big Data sets for introductory programming
- Provides a contextualized experience to motivate students and increase comprehension
- Specially developed, innovative technology makes creating and working with real-time and massive datasets trivial even for beginner students

Waltz Project 2018-Present

https://github.com/acbart/waltz

- Synchronizes curricular materials between a Learning Management Systems (LMS) and your local filesystem.
- Extensible platform works a variety of technologies, including orks with Canvas, GradeScope, and BlockPy
- Lightweight, friendly Markdown-based format for local resources

Designer 2020-Present

https://github.com/krishols/designer

- User-friendly game development library for Python
- Participatory design with the goal of being truly easy for novices
- Built on Pygame with support for an extensive number of sophisticated features like animations, image manipulation, and more.

ADVISING

Graduate

- Luke Gusukuma, Ph.D. Computer Science at Virginia Tech (2017-2020) - Co-advisor with Dennis Kafura. Successfully defended in June 2020.

Undergraduate

- Kristina Holsapple, B.S. Computer Science at University of Delaware (2020-present)
- James Skripchuk, Honors B.S. Computer Science at University of Delaware (2019-2020)
- Darren Butler, B.S. Computer Science at Philander Smith College (2018-2019)
- Allie Sarvar, B.S. Computer Science at Virginia Tech (2016-2017)

- Michael Friend, B.S. Computer Science at Virginia Tech (2016-2017)
- Edward McEnrue, B.S. Computer Science at Virginia Tech (2015-2016)
- Ryan Whitcomb, B.S. Computational Modeling at Virginia Tech (2014-2016)
- Ishita Ganotra, B.S. Computer Science at Virginia Tech (2014-2015)
- Omar Saleem, B.S. Computer Science at Virginia Tech (2013-2014)
- Jason Riddle, B.S. Computer Science at Virginia Tech (2013-2014)

CURRENT RESEARCH INTERESTS

Digital Education, Computer Science Education, Data Science, Academic Motivation, Instructional Design, Situated Learning Theory, Introductory Computing Experiences, Web-based Programming Environments, Guided Feedback, Program Analysis, Educational Data Mining, Learning Analytics, Educational Games, Educational Software Design

REFERENCES

References available on request.