

James Skripchuk

Raleigh, North Carolina, USA
jmskripc@ncsu.edu • (302) 750-9355 • <https://jameskripchuk.com/>

EDUCATION	PhD in Computer Science 2020 – Present <i>North Carolina State University (NCSU)</i> GPA: 4.0 Research Area: Computer Science Education
	Honors B.S. in Computer Science May 2020 <i>University of Delaware (UD)</i> Magna Cum Laude Concentration: Artificial Intelligence and Machine Learning GPA: 3.92 Minors: Electrical & Computer Engineering, Physics, Mathematics

RECOGNITION	NSF Graduate Research Fellowship Program (GRFP) 2021 Fellowship <i>A \$102,000 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 STEM fields across the entire US, and considered one of the most prestigious scholarships offered through the NSF.</i>
	North Carolina State University 2020 Provost's Doctoral Fellowship <i>Designed to help in college and departmental efforts to recruit outstanding new doctoral students to NCSU. Prospective students cannot apply directly for these fellowships, but are nominated by their respective colleges.</i>
	University of Delaware Fall 2016 – Spring 2019 Dean's List
	Computer and Information Sciences Outstanding Senior Student Award 2019
	Steven Geracimos Memorial Award 2018 <i>A monetary award to an outstanding computer science major who has demonstrated both interest and aptitude for the subject as characterized by Steven Geracimos.</i>
	General Honors Award 2018 <i>Recognizes a student's pursuit of Honors challenges and enrichment opportunities during the first two years of university study</i>
Trustee Scholarship 2016	

RESEARCH INTERESTS	Computer Science Education, Digital Education, Data-Driven Instructional Design, Educational Data Mining, Academic Motivation, Self-Efficacy in Computer Science, Data Literacy, Non-Traditional Education, Quantum Computing Education, Sound & Music Computing
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RESEARCH PROJECTS

Web Help-Seeking Behaviors of Novice Programmers

2021 – Present

Supervisor: Dr. Thomas Price

Studying the web-search behaviors of novice programmers, in an effort to improve help-seeking pedagogy and develop interactive learning environments to foster help-seeking skills.

- Performed small-scale lab studies observing novice programmer's behavior using the Web while solving introductory problems.
- Qualitatively analyzed interview data in order to extract insights on common behaviors, both positive and negative, that novice programmers engage in while using the Web.

Machine Learning Education

2020 – Present

Supervisor: Dr. Thomas Price

Studying how we can effectively improve machine learning pedagogy by performing qualitative and quantitative analysis on student code in tandem with data-driven techniques.

- Created a logging system to continuously log snapshots of student code on the central server for a cross-listed undergraduate and graduate machine learning class.
- Codified a taxonomy of common errors that were present in open-ended Machine Learning projects, creating as a starting point for researchers and educators studying misconceptions in machine learning.

Investigating Data-Driven Course Design

Aug 2019 – 2020

Supervisor: Dr. Austin Bart

Studied student learning outcomes in introductory computing courses and the effectiveness of data-driven course design via analyzing programming assignment snapshots.

- Performed exploratory data analysis on ProgSnap2 programming snapshot data.
- Developed a general pipeline to process, analyze, and visualize the ProgSnap2 data towards an end goal of generated end-of-year reports to emphasize key learning objectives.

Computational Thinking in Music

Jun 2017 – Present

Supervisors: Dr. Lori Pollock and Dr. Jennifer Shafer

Developed a general education course to teach basic computational thinking (CT) principles as a response to NSF's call for "computer science for all students". This course naturally aligns CT principles (data, decomposition, algorithms, abstraction) with music theory topics for an authentic learning experience.

- Posed ideas for CT modules, and provided feasibility estimates on whether specific computational exercises were right for learners' skill levels.
- Designed a Python module for the students to use during assignments.
- Served as a TA for the class and helped explain common computational misconceptions.

PUBLICATIONS

Papers

J. Skripchuk, N. Bennett, J. Zheng, E. Li, T. Price. *Analysis of Novices' Web-Based Help-Seeking Behavior While Programming*. SIGCSE '23. Toronto, Canada. March 15 - March 18, 2023.

J. Skripchuk, Y. Shi, T. Price. *Identifying Common Errors in Open-ended Machine Learning Projects*. SIGCSE '22. Providence, RI. March 2 - March 5, 2022.

W. Wang, A. Kwatra, **J. Skripchuk**, N. Gomes, A. Milliken, C. Martens, T. Barnes, T. Price. *Novices' Learning Barriers When Using Code Examples in Open-Ended Programming*. ITiCSE '21. Paderborn, Germany. June 26 - July 1, 2021.

Posters

J. Shafer, **J. Skripchuk**. *Computational Thinking in Music: A Data-Driven General Education STEAM Course*. SIGCSE '20. Portland, OR. March 11-14, 2020.

Workshops

A.C. Bart, T. Rutherford, **J. Skripchuk**. *Evaluating an Instrumented Python CS1 Course*. 4th Educational Data Mining in Computer Science Education (CSEDM) Virtual Workshop. July 10th, 2020

**TEACHING
EXPERIENCE****North Carolina State University***Instructor*

Courses:

CSC 316 - Data Structures and Algorithms

Summer 2022

Elon University*Adjunct Instructor*

Courses:

CSC 3300 - Algorithm Analysis

Fall 2021

Code in Place*Instructor*

Spring 2021

Served as a weekly instructor for Stanford's CS1 summer MOOC to a private section of a dozen students from across the world. Compared to traditional MOOCs, Code in Place's use of small weekly labs with a dedicated instructor increased course completion rates ten-fold.

Artificial Intelligence (AI) Academy*Instructional Designer*

Spring 2021

Developed slides, exercises, homeworks, and hands-on workshops for NCSU's AI Academy professional development course. AI Academy serves as "a pathway to industry credentials... to individuals interested in entering or advancing in the emerging field of AI".

University of Delaware*Teaching Assistant*

Courses:

CISC 108 - Introduction to Computer Science I

Fall 2019

CISC 320 - Introduction to Algorithms

Spring 2020

SERVICE**Park Scholar Selection Committee***Committee Member*

Fall 2022

Selected to serve as a committee member for NCSU's Park Scholarship program, a prestigious and selective four-year undergraduate scholarship award which aims to "bring exceptional students to NC State, based on outstanding accomplishments and potential in scholarship, leadership, service, and character." Reviewed applications, interviewed students, and collaborated with other committee members in order to select recipients for the award.

**ADVISING &
MENTORSHIP****Socially-Relevant Computing and Analytics REU***Graduate Mentor*

Summer 2022

Directly mentored undergraduate students during a summer Research Experience for Undergraduates (REU) at NCSU. Undergraduates were immersed in a real research project and learned skills such as literature reviews, qualitative, and quantitative analysis, all directly leading to published results. Coordinated with other graduate students for weekly presentations showcasing the diverse range of CS applications, as well as external events in order to build camaraderie between REU participants.

Undergraduate Researchers

2021 – Present

Mentored students in practical research skills while engaging them in topics that they wish to study.

Camille Jones, B.S. Computer Science at NCSU

2022

Bryan Wilson, B.S. Electrical & Computer Engineering at NCSU

2022 – Present

Neil Bennett, B.S. Computer Science at NCSU

Summer 2022

Jeffrey Zheng, B.S. Computer Science at University of Pittsburgh

Summer 2022

Eric Li, B.S. Mechanical Engineering at NCSU

2021 – 2022

INDUSTRY EXPERIENCE	<p>JPMorgan Chase & Co. <i>Software Engineer Intern</i></p> <ul style="list-style-type: none"> <div style="display: flex; justify-content: space-between;"> ▪ Corporate Finance Sector Jun 2019 – Aug 2019 </div> <ul style="list-style-type: none"> • Developed a machine learning model for a natural language interface to business intelligence databases. The model constructed natural language responses from the natural language queries, and would also return data and figures predicted to be related to the user’s search. • Designed and prototyped an internal notebook style web application that interfaced with the machine learning model. Applied HCI principles based on iterated feedback from real clients. <div style="display: flex; justify-content: space-between;"> ▪ Infrastructure Sector Jun 2018 – Jun 2019 </div> <ul style="list-style-type: none"> • Maintained large cross-platform virtual machine network and switched IT automation configuration managers to an open-source alternative, promoting a continuous integration pipeline. • Designed various Splunk dashboards for real-time analytics of network health and security status.
CAMPUS ACTIVITIES	<p>Association for Computing Machinery, University of Delaware 2018 – 2020 <i>PR Manager</i></p> <ul style="list-style-type: none"> ▪ Organized meeting contents and contacted professors for potential talks. ▪ Organized the first “CS Freshman Social” in an effort to increase community in the UD Computer Science Department, which had a large turnout of over 40 people.
VOLUNTEER WORK	<p>Newark Charter Middle School 2015 – 2020 <i>First Lego League Robotics Coach</i></p> <ul style="list-style-type: none"> ▪ Coached a small team of seven middle-school students in nationwide robotics competition ▪ Mentored scientific thinking and engineering skills through mentoring practical project design and small robot construction ▪ Won “Best Project” in 2019 state championships, and won 2nd place overall. Team was invited to the the nationally competitive Carolinas Open Invitational.
TECHNICAL SKILLS	<p>Python, PyTorch, HTML, JavaScript, Java, SQL, C, C/C++, ARM, \LaTeX</p>