

# Colton Botta

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🌐 ColtonBotta

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## Education

### University of Edinburgh

PHD INFORMATICS - INSTITUTE FOR LANGUAGE, COGNITION, AND COMPUTATION

- Funded by Informatics Graduate School PhD Scholarship
- Dissertation: *A framework for facilitating responsible Generative AI use in the classroom*
- Advisor: Judy Robertson

Edinburgh, Scotland

2024 - 2027

### University of Cambridge

MPHIL IN ENGINEERING (MACHINE LEARNING GROUP)

- Funded by **Marshall Scholarship**
- Dissertation: *WebBUGS: An Interface for Browser-Based Probabilistic Programming with BUGS*
- Advisors: Hong Ge, Alan Blackwell

Cambridge, England

2022 - 2023

### University of Edinburgh

MSC IN COGNITIVE SCIENCE WITH DISTINCTION

- Funded by **Marshall Scholarship**
- Dissertation: *Diversity-Aware Local Clustering in Bandits*
- Advisors: Kobi Gal, Avi Segal

Edinburgh, Scotland

2021 - 2022

### North Carolina State University

BS IN COMPUTER SCIENCE | GPA: 4.0

- Recognized as **Valedictorian** | Class Rank: 1 of 7668
- Minor in Business Entrepreneurship
- Honors Thesis: *The Future of Developer-Centric IDEs*
- Advisor: Dr. Christopher Parnin

Raleigh, USA

2016 - 2019

## Publications

### Imaginaries of Responsible Generative AI in Secondary Education

- Submitted: Under Review

### Domain-Specific Probabilistic Programming with Multiverse Explorer

AF. BLACKWELL, A. RAYMOND, **C. BOTTA**, M. KEENAN, W. HAYTER-DALGLIESH

- VL/HCC 2023

Washington DC, USA

### Personalizing Interventions with Diversity Aware Bandits

**C. BOTTA**, A. SEGAL, K. GAL

- HHA 2023
- Diversity-Aware Hybrid Human-Artificial Intelligence Workshop

Munich, Germany

### Sequencing Educational Content Using Diversity Aware Bandits

**C. BOTTA**, A. SEGAL, K. GAL

- EDM 2023

Bangaluru, India

### Here We Go Again: Why Is It Difficult for Developers to Learn Another Programming Language?

N. SHRESTHA, **C. BOTTA**, T. BARIK, C. PARNIN

- ICSE 2020
- SIGSOFT Distinguished Paper

Montreal, Canada

## Professional Experience

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### Broonie

CO-FOUNDER

Edinburgh, Scotland

2025 - Current

- Startup in stealth mode - we are building Generative AI apps for schools!

### Bayes Centre

RESEARCH ASSISTANT

Edinburgh, Scotland

2025 - Current

- Building Generative AI course for dissemination across the University of Edinburgh to train professional services staff
- 5 hours of content including introduction to AI, how Generative AI works, and how to leverage it for work

### University of Edinburgh

RESEARCH ASSISTANT

Edinburgh, Scotland

2024

- Spent 4 weeks working in two secondary schools to discuss and use Generative AI with young people
- Discussed speculative education futures, young people's rights, and gathered feedback on what students do and don't want tech companies to prioritize when developing AI tools for the classroom

### Digital Skills Education

SOFTWARE ENGINEER

Glasgow, Scotland

2022 - 2024

- Owned all parts of the design, implementation and testing of several educational games for secondary school students
- Click [HERE](#) to play "Cracking One Million Passwords with Python"
- Click [HERE](#) to play "Hide Secret Messages Using Technology"

### Stanford University - Code in Place

HEAD TEACHING ASSISTANT

Remote

2023

- Responsible for training cohort of 20 Section Leaders to run Stanford's CS106A Python Course
- Held weekly office hours, develops course content, and regularly answered student queries

### Pendo.io

SOFTWARE ENGINEER

Raleigh, USA

2020 - 2021

- Contributed to design, implementation, and testing of major features (scheduled reports, dashboards, and core events) using Golang and Python
- Collaborated closely with quality engineers and product managers to iterate on features based on user feedback

### IBM

SOFTWARE DEVELOPER INTERN

Research Triangle, USA

2019

- Implemented a scalable, full stack web application that dynamically monitors key business KPIs on IBM Cloud

### Covestro

CYBER SECURITY INTERN

Pittsburgh, USA

2018

- Developed Java app to scrape email servers for malware, thus directly protecting over 16,000 employees from cyber attacks

## Machine Learning Experience

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### Diversity-Aware Reinforcement Learning

MASTERS DISSERTATION

Edinburgh, Scotland

2021-2023

- Developed a novel, "diversity-aware" contextual multi-armed bandit RL algorithm that accurately predicts which questions that students are most likely to get correct
- Found that dynamics of user features are a proxy for human diversity
- Published at EDM 2023

### Reinforcement Learning Experiments

MASTERS RESEARCH PROJECT

Edinburgh, Scotland

2021-2022

- Solved basic MDPs, matrix games, and several OpenAI Gym Environments (Taxi-v3, CartPole, Bipedal Walker, Pendulum) using various RL techniques
- Used value iteration, policy iteration, Q-learning, Deep Q-Networks, REINFORCE, DDPG, multi-agent RL, and others

## Ethics of AI

MASTERS SEMINAR SERIES

Edinburgh, Scotland

2021-2022

- Learned about the ethical issues of AI from Dr. Shannon Vallor, including: how sociotechnical systems, historical forces, cultural values, and power relations have shaped the design, development and use of AI systems, and how society might be shaped by AI in the future

## Automated Javadoc Grader

UNDERGRADUATE RESEARCH PROJECT

Raleigh, USA

2019-2020

- Led team to automate grading and feedback for student Javadoc comments using neural networks (LSTM and RNN)

## Teaching

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### FULL LECTURER

2025 **University of Edinburgh**, Informatics 1: Object Oriented Programming | INF1B

Edinburgh,  
Scotland

2021 **Stanford University - Code in Place**, Programming Methodologies | CS106A

Virtual

2019 **North Carolina State University**, Software Development Fundamentals Lab | CSC216 Lab

Raleigh, USA

### TEACHING ASSISTANT

2019 **North Carolina State University**, Software Development Fundamentals | CSC 216

Raleigh, USA

2018 **North Carolina State University**, Introduction to Computing – Java | CSC 116

Raleigh, USA

## Talks

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### INVITED TALKS

#### University of Oxford: TAK Index

Oxford, UK

INVITED SPEAKER

2024

The Impact of AI on Education

#### IEEE Symposium on Visual Languages and Human-Centric Computing

Washington DC, USA

TALK - RESEARCH PAPER TRACK

2023

Domain-Specific Probabilistic Programming with Multiverse Explorer

#### NC State: Computer Science Diploma Ceremony Speaker

Raleigh, USA

INVITED SPEAKER

2019

Be Faithful to Your Passions

#### NC State: Science of Software REU

Raleigh, USA

INVITED SPEAKER

2018

An Empirical Study of What Programmers Ask When Learning a New Language

### POSTERS

#### NC State Summer Undergraduate Research & Creativity Symposium

Raleigh, USA

AN EMPIRICAL STUDY OF WHAT PROGRAMMERS ASK WHEN LEARNING A NEW LANGUAGE

2018

## Honors & Awards

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2024	<b>Informatics Graduate School PhD Scholarship</b> , 3.5 years of PhD funding	\$100,000
2021	<b>Marshall Scholarship</b> , The two-year scholarship includes full tuition, fees, cost-of-living expenses, an annual book grant, a thesis grant, research and daily travel grants, and fares to and from the UK.	\$100,000
2020	<b>NC State College of Engineering Senior Award</b> , Given annually to 1 student based on academic excellence, intellectual breadth, and impact of research out of 2500+ seniors	
2019	<b>Donald L Bitzer Creativity Award</b> , Given annually to 2 students to recognize and encourage creativity in undergraduate computer science out of 367 students	\$500
2019	<b>Computer Science Faculty Senior Scholar</b> , Awarded annually to the most outstanding rising senior in the department out of 367 students	\$2,500
2019	<b>Student Mentoring Workshop - ICSE 2019</b> , Funded to travel to Montreal, Canada to explore academic research careers and receive feedback on undergraduate research	\$2,000
2019	<b>NC State Computer Science Honors Program</b> , Awarded for completion of research thesis	
2019	<b>Packhacks 2019</b> , 3rd place out of 107 teams	\$250
2016	<b>NC State University Honors Program</b> , Offered to top 5% of incoming Freshmen	