R. C. Haraway

I am a mathematician working in industry. Currently I validate models at Regions Bank. I communicate attentively to audiences during presentations, whether to professionals at regional, national, and international meetings, or to undergraduate novices learning the basics of logic. I quickly learn new technologies.

Employment and Concurrent Work

Sep. 2022 to present — **Risk quantitative model validation analyst**, *Regions Bank*
I validate mathematical models at Regions. I have worked mostly on validating marketing and other models that regress confidence in some binary event occurring, e.g., a positive response to a marketing campaign. I have also given an internal talk on SHAP, and assisted periodically with recruiting.

Jan. 2022 to May 2022 — **Part-time lecturer**, *University of Alabama at Huntsville*
At the request of the department chair and two faculty members, I led two sections of CS 214 as instructor of record, correcting the curriculum where needed, and developing novel assignments. Also during this time, I began writing a new algorithm, joint with three others, to recover a diagram of a knotted loop from a tetrahedral mesh of the surrounding space, advancing known complexity estimates on this computational problem from doubly-exponential to linearly-exponential.

2017 to 2020 — **Postdoctoral fellow**, *Oklahoma State University*
Led courses in undergraduate calculus in collaboration with education experts. Developed and taught a graduate course introducing basic set theory and point-set topology. Cowrote and maintained onboarding checklist for new math faculty. Published a program in Python to search tetrahedral meshes for simple interesting embedded surfaces, and also a procedure to more effectively search hyperbolic triangulations for small loops.

2015 to 2017 — **Postdoctoral research associate**, *University of Sydney*
Wrote Haskell and Python code to draw triangulations of discs to illustrate a convex projective developing map. Published preliminary results on moduli spaces of convex projective surfaces. Improved my previous hyperbolicity algorithm runtime, enabling the analysis of 15× as many triangulations as before.

Publications

Determining hyperbolicity of compact orientable 3-manifolds with torus boundary, J. Comp. Geom. **11**:1 (2020), 125–136.

Practical bounds for a Dehn parental test, Proc. Amer. Math. Soc. **147** (2019), 427–442.

Tessellating the moduli space of strictly convex projective structures on the once-punctured torus, with S. Tillmann, Exp. Math. (2017), 1–16.

Preprints

Birmingham, AL – 35211
bobbycyiii@fastmail.com • *bobbycyiii.fyi*

Hyperbolic 3-manifolds of low cusp volume, with D. Gabai, G. R. Meyerhoff, N. J. Thurston, and A. Yarmola, submitted for publication.

On the complexity of cusped non-hyperbolicity, with N. Hoffman, submitted for publication.

On moduli spaces of convex projective structures on surfaces: outitude and cell-decomposition in Fock-Goncharov coordinates, with R. Löwe, D. Tate, and S. Tillmann, submitted for publication.

Education

2021 to present — **Coursework towards Master's Degree**, *University of Alabama at Huntsville*, Comp. Sci., GPA: 4.0

Spring 2021
CS 221: Computer Science II: Data Structures
CS 309: Computer Organization and Switching Theory
ISE 690: Statistical Methods for Engineers

Summer 2021
CS 307: Object Oriented Programming in C++
CS 317: Intro to the Design and Analysis of Algorithms

Fall 2021
CS 370: Intro to Computer Networks
CS 413: Intro to Digital Computer Architecture
CS 545: Intro to Computer Graphics
CS 650: The Software Engineering Process

Spring 2022
CS 490: Intro to Operating Systems

2010 to 2015 — **Doctor of Philosophy**, *Boston College*, Mathematics, Topology
Dissertation: *Dehn paternity bounds and hyperbolicity tests*

2006 to 2010 — **Bachelor of Arts**, *Princeton University*, Mathematics, Geometry
Senior Thesis: *Tubes in hyperbolic space*

Invited talks

Oct. 2020 — AMS Special Session: Interactions Between Algebra, Geometry and Topology in Low Dimensions

Jan. 2020 — AMS Special Session: Applications and Computations in Knot Theory

Nov. 2019 — Redbud Fall Topology Conference

Nov. 2018 — Princeton Topology Seminar

Nov. 2017 — Redbud Fall Topology Conference

May 2017 — Monash University Topology Seminar

Mar. 2017 — UC Davis, Department of Mathematics

Dec. 2016 — MATRIX Program: Interactions between topological recursion, modularity, quantum invariants and low-dimensional topology

May 2016 — Monash University Topology Seminar

Apr. 2016 — University of New South Wales Pure Maths Seminar

Software Skills

Python, SQL, PySpark, LaTeX, Linux

Birmingham, AL – 35211
bobbycyiii@fastmail.com • *bobbycyiii.fyi*