

ALEX BAGNALL

CONTACT INFO

E-mail abagnalla@gmail.com

Phone +1 (740) 710-1811

Website bagnalla.github.io

GitHub github.com/bagnalla

ABOUT ME

I received a PhD in Computer Science from Ohio University in May 2023. I've taught undergraduate courses on PL and compilers, and have publications on verification of probabilistic programming and machine learning systems.

EXPERIENCE

INSTRUCTOR, TEACHING/RESEARCH ASSISTANT 2021-2022

Ohio University | Athens, OH

(Taught CS3200 (Organization of Programming Languages) and CS4100 (Formal Languages and Compilers).)

- Designed projects, gave all lectures, and tutored students.

INTERN

Summers
2018, 2020

Galois, Inc. | Portland, OR

- Developed Coq library for solving recursive domain equations. See: github.com/bagnalla/recursive-domains.
- Implemented compiler in Haskell from Golang to strongly-typed symbolic execution backend for SMT-based verification. See: github.com/Galois-Inc/golang and github.com/GaloisInc/crucible/tree/master/crucible-go.

INTERN / APPLICATION DEVELOPER

Summer 2015

Society of Cardiovascular Patient Care | Columbus, OH

- Developed CRM applications with C#/ASP.NET MVC and HTML/JavaScript

EDUCATION

PhD in Computer Science

2017-2023

Ohio University | Athens, OH

- Thesis: "Formally Verified Samplers From Discrete Probabilistic Programs".
- G.E. and G.V. Smith Memory Engineering Award

HOBBY PROJECTS

AAL, s-expression viewer, hakan, nash, TempleOS Lisp

PUBLICATIONS

- Articles** **Bagnall, Alexander**, Samuel Merten, and Gordon Stewart (2017a). "A Library for Algorithmic Game Theory in Ssreflect/Coq". In: *Journal of Formalized Reasoning* 10, pp. 67-95. DOI: 10.6092/issn.1972-5787/7235. URL: <http://ace.cs.ohio.edu/~abagnall/papers/jfr2017games.pdf>.
- Papers** **Bagnall, Alexander**, Samuel Merten, and Gordon Stewart (2017b). "Brief Announcement: Certified Multiplicative Weights Update". In: *Proceedings of PODC'17*, pp. 459-461. DOI: 10.1145/3087801.3087852. URL: <http://ace.cs.ohio.edu/~abagnall/papers/podc2017briefmwu.pdf>.
- Bagnall, Alexander** and Gordon Stewart (2019). "Certifying the True Error: Machine Learning in Coq with Verified Generalization Guarantees". In: *Proceedings of AAAI'19*, pp. 2662-2669. DOI: 10.1609/aaai.v33i01.33012662. URL: <http://ace.cs.ohio.edu/~abagnall/papers/aaai2019mlcert.pdf>.
- Bagnall, Alexander**, Gordon Stewart, and Anindya Banerjee (2020). "Coinductive Trees for Exact Inference of Probabilistic Programs". In: *LAFI'20*. URL: <http://ace.cs.ohio.edu/~gstewart/papers/lafi20-bagnall.pdf>.
- (2023a). "Formally Verified Samplers From Probabilistic Programs With Loops and Conditioning". In: *CoRR (to appear in PLDI'23)* abs/2211.06747. DOI: 10.48550/arXiv.2211.06747. URL: <https://arxiv.org/abs/2211.06747>.
- Merten, Samuel, **Bagnall, Alexander**, and Gordon Stewart (2018). "Verified Learning Without Regret - From Algorithmic Game Theory to Distributed Systems with Mechanized Complexity Guarantees". In: *Proceedings of ESOP'18* 10801, pp. 561-588. DOI: 10.1007/978-3-319-89884-1_20. URL: <http://ace.cs.ohio.edu/~abagnall/papers/esop2018cage.pdf>.
- Preprints** **Bagnall, Alexander**, Razvan Bunescu, and Gordon Stewart (2018). "Training Ensembles to Detect Adversarial Examples". In: *CoRR* abs/1712.04006. DOI: 10.48550/ARXIV.1712.04006. URL: <https://arxiv.org/abs/1712.04006>.
- Bagnall, Alexander**, Gordon Stewart, and Anindya Banerjee (2023b). "Inductive Reasoning for Coinductive Types". In: *CoRR*. DOI: 10.48550/arXiv.2301.09802. URL: <https://arxiv.org/abs/2301.09802>.

REFERENCES

- Gordon Stewart** Formal Methods Engineer
BedRock Systems, Inc.
gstew5@gmail.com
- Anindya Banerjee** Affiliate Faculty
IMDEA Software Institute
anindya.banerjee@imdea.org
- Aaron Tomb** Applied Scientist
Amazon Web Services (AWS)
linkedin.com/in/aaron-tomb-7a31564