David Shriver

CONTACT INFORMATION	Computer Science Department University of Virginia Charlottesville, VA	*E-mail:* dls2fc@virginia.edu *Web:* http://davidshriver.me

RESEARCH INTERESTS

My research interests lie in the intersection of software engineering and artificial intelligence, especially in the development of program analysis techniques for machine learning systems.

EDUCATION

University of Virginia, Charlottesville, Virginia USA

Ph.D. Student, Computer Science
- Advisors: Sebastian Elbaum and Matt Dwyer

University of Nebraska-Lincoln, Lincoln, Nebraska USA

M.S., Computer Science, May 2018
- Thesis: "Assessing the Quality and Stability of Recommender Systems"
- Advisor: Sebastian Elbaum

B.S., Computer Engineering, May 2016

POSITIONS HELD

Intern, June 2021 - August 2021
National Aeronautics and Space Administration

Research Assistant, August 2018 - Present
Department of Computer Science, University of Virginia

Research Assistant, March 2014 - July 2018
Department of Computer Science and Engineering, University of Nebraska-Lincoln

PUBLICATIONS

Conference Publications

David Shriver, Sebastian Elbaum, Matthew B. Dwyer. 2021. DNNV: A Framework for Deep Neural Network Verification. In Computer Aided Verification - 33rd International Conference, CAV 2021, Virtual Event, July 20-23, 2021, Proceedings, Part I. 137–150. `https://doi.org/10.1007/978-3-030-81685-8_6`. Badges: Functional, Available, Reusable.

David Shriver, Sebastian Elbaum, Matthew B. Dwyer. 2021. Reducing DNN Properties to Enable Falsification with Adversarial Attacks. In 2021 IEEE/ACM 43rd International Conference on Software Engineering (ICSE). 275–287. `https://doi.org/10.1109/ICSE43902.2021.00036`. Badges: Available, Reusable.

Dong Xu, David Shriver, Matthew B. Dwyer, Sebastian Elbaum. 2020. Systematic Generation of Diverse Benchmarks for DNN Verification. In Computer Aided Verification - 32nd International Conference, CAV 2020, Los Angeles, CA, USA, July 21-24, 2020, Proceedings, Part I. 97–121. `https://doi.org/10.1007/978-3-030-53288-8_5`. Badges: Available, Reusable.

David Shriver, Sebastian Elbaum, Matthew B. Dwyer, and David S. Rosenblum. 2019. Evaluating Recommender System Stability with Influence-Guided Fuzzing. In Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI '19). pp 4934–4942. DOI: `https://doi.org/10.1609/aaai.v33i01.33014934`.

David Shriver. 2018. Poster: Toward the development of richer properties for recommender sys-

tems. In Proceedings of the 40th International Conference on Software Engineering: Companion Proceedings (ICSE '18). pp 173–174. DOI: `https://doi.org/10.1145/3183440.3195082`.

David Shriver, Sebastian Elbaum, and Kathryn T. Stolee. 2017. At the end of synthesis: narrowing program candidates. In Proceedings of the 39th International Conference on Software Engineering: New Ideas and Emerging Results Track (ICSE-NIER '17). pp 19–22. DOI: `https://doi.org/10.1109/ICSE-NIER.2017.7`.

Upcoming

Felipe Toledo, David Shriver, Sebastian Elbaum, Matthew B. Dwyer. 2021. Distribution Models for Falsification and Verification of DNNs. To Appear in ASE 2021. Badges: Available, Reusable.

PRESENTATIONS | DNNV: A Framework for Deep Neural Network Verification. CAV 2021. `https://youtu.be/gXT1m9JYAyQ`

Reducing DNN Properties to Enable Falsification with Adversarial Attacks. ICSE 2021. `https://youtu.be/hcQFYUFwp_U`

SOFTWARE | DNNV. A Framework for Deep Neural Network Verification. DNNV standardizes the network and property input formats to enable multiple verification tools to run on a single network and property. This facilitates both verifier comparison and artifact re-use. `https://github.com/dlshriver/DNNV`

DNNF. Enables the application of falsification methods such as adversarial attacks to the checking of general DNN safety properties. DNNF leverages these techniques by employing reductions to automatically transform correctness problems into equivalent sets of adversarial robustness problems. `https://github.com/dlshriver/DNNF`

SERVICE | Artifact Evaluation Reviewer ISSTA 2021

Co-reviewer ISSTA 2021

Co-reviewer ICSE 2020

HONORS AND AWARDS | University of Nebraska-Lincoln: graduated with Highest Distinction, May 2016

UNL CSE Department: Computer Engineering Outstanding Undergraduate Senior, 2016

MEMBERSHIPS | AAAI, ACM, IEEE