

# Will Leeson

Ph.D. Candidate, University of Virginia

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My research interests lie at the intersection of software engineering and machine learning. There are many heuristics in software engineering that are based on expert intuition. Graph representations of programs are rich with information and are frequently used as the underlying representations of the problem these heuristics are used to solve. I develop graph representations and machine learning models to learn replacements for these heuristics.

## Education

- 2019 – **University of Virginia, USA**  
Ph.D. Computer Science  
Advisor: Dr. Matthew B. Dwyer
- 2015 – 2019 **Drake University, USA**  
B.S. in Computer Science  
B.S. in Data Analytics

## Experience

- 2019 – Research Assistant, Less Lab, University of Virginia ([less-lab-uva.github.io](https://less-lab-uva.github.io))
- 2017 – 2019 Research Assistant, Drake University

## Honors & Awards

- 2023 **Distinguished Paper Award**  
ACM SIGSOFT
- 2021 **Department of Computer Science Outstanding Teaching Awards**  
University of Virginia

## Publications

- 2024 **Will Leeson**, Soneya Binta Hossain, Matthew B Dwyer, “Paper Under Double Blind Submission,” 2024, **Under Submission**
- 2023 **Will Leeson**, Matthew B Dwyer, “Algorithm Selection for Software Verification using Graph Neural Networks,” *ACM Trans. Softw. Eng. Methodol.*, 2023, **To Appear**
- 2023 **Will Leeson**, Matthew B Dwyer, and Antonio Filieri, “Sibyl: Improving Software Engineering Tools with SMT Selection,” in *2023 IEEE/ACM 45th International Conference on Software Engineering (ICSE)*, IEEE, 2023, pp. 2185–2197
- 2022 **Will Leeson** and Matthew B Dwyer, “Graves-CPA: A graph-attention verifier selector (competition contribution),” in *International Conference on Tools and Algorithms for the Construction and Analysis of Systems*, Springer, 2022, pp. 440–445
- 2019 **William Leeson**, Adam Resnick, Daniel Alexander and John Rovers, “Natural Language Processing (NLP) in qualitative public health research: a proof of concept study,” *International Journal of Qualitative Methods*, vol. 18, p. 1 609 406 919 887 021, 2019

## Invited Talks

2023 **Will Leeson** “Do What I Want, Not What I Say: Proving Software Acts According to Plan”, Carleton College, March 9 2023

## Service

2022 – 2023 **Jury Member**, Competition on Software Verification (SV-Comp)  
2022 – 2023 **Graduate Mentor**, Department of Computer Science Graduate Mentorship Program  
2021 **Student Volunteer**, International Conference on Software Engineering (ICSE)

## Teaching

Fall 2023 Primary Instructor, **Introduction to Information Technology**, University of Virginia  
Spring 2023 Primary Instructor, **Introduction to Information Technology**, University of Virginia  
Fall 2021 Teaching Assistant, **Compilers (Undergraduate)**, University of Virginia  
Fall 2021 Teaching Assistant, **Software Analysis and Applications (Undergraduate)**, University of Virginia  
Fall 2020 Teaching Assistant, **Software Analysis and Applications (Graduate)**, University of Virginia  
Fall 2020 Teaching Assistant, **Compilers (Undergraduate)**, University of Virginia

## Mentorship

Summer 2023 **Alexis Davis**, Summer REU student  
“Using LLMs to create formal specifications from natural language requirements”  
2022-2023 **Khyati Kiyawat**, PhD student at the University of Virginia  
Department of Computer Science Graduate Mentorship Program  
2022-2023 **Daniel Hieber**, Master student at the University of Virginia  
Department of Computer Science Graduate Mentorship Program

## References

**Matthew B Dwyer** (Advisor)  
Professor  
Department of Computer Science  
University of Virginia  
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**Sebastian Elbaum**  
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