Felipe Toledo

MSc, Ph.D. Candidate, University of Virginia

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My research lies on the intersection of software engineering and artificial intelligence, particularly within the domain of autonomous vehicles. I work on creating property specifications for AI systems, responsible for processing sensor inputs, to make sure they behave as expected and to uncover failures. My goal is to enhance the safety of autonomous vehicles and make them more reliable.

Education

2020 –	**University of Virginia**, USA Ph.D. Computer Science Advisor: Dr. Sebastian Elbaum
2020 – 2023	**University of Virginia**, USA Master in Computer Science
2014 – 2018	**Universidad Católica de Córdoba**, Argentina Systems Engineer

Experience

2020 –	Research Assistant, Less Lab, University of Virginia. [Github]
2019 – 2020	Web developer, Motorflash, Spain
2018 – 2019	Web developer, Checkbox, Argentina

Honours & Awards

2019	**Ingeniero Isidoro Marín** - *Academia nacional Argentina de Ingeniería* Granted to the best engineering graduate of each Argentine university.
2019	**Summa cum laude** - *Universidad Católica de Córdoba* Granted to the best student in the School of Engineering.
2014 – 2018	**Scholarship for Engineering Studies** - *Córdoba Government* Granted to students studying engineering, that were completing 75% of the courses each year, and had higher grades than the average of their classes.

Publications

2024	T. Woodlief, **Toledo, Felipe**, S. Elbaum, and M. B. Dwyer, "S^3C Spatial semantic scene coverage for autonomous vehicles," 2024. *To be presented at ICSE 24*
2023	**Toledo, Felipe**, D. Shriver, S. Elbaum, and M. B. Dwyer, "Deeper notions of correctness in image-based dnns: Lifting properties from pixel to entities," in *Proceedings of the 31st ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering*, ser. ESEC/FSE 2023, San Francisco, CA, USA: Association for Computing Machinery, 2023, pp. 2122–2126. DOI: 10.1145/3611643.3613079
2021	**Toledo, Felipe**, D. Shriver, S. Elbaum, and M. B. Dwyer, "Distribution models for falsification and verification of dnns," in *2021 36th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, 2021, pp. 317–329. DOI: 10.1109/ASE51524.2021.9678590. [Artifact]

Talks

2023   **Felipe Toledo** "Deeper Notions of Correctness in Image-Based DNNs: Lifting Properties from Pixel to Entities", European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE). [Presentation]

2021   **Felipe Toledo** "Distribution Models for Falsification and Verification of DNNs", International Conference on Automated Software Engineering (ASE). [Presentation]

Community Service

2023   **Journal Reviewer**, IEEE Transactions on Software Engineering (TSE)

2022   **Artifact Reviewer**, International Conference on Automated Software Engineering (ASE)

Teaching

2023 - Spring   Teaching Assistant, **CS6763: Cyber-Physical Systems: Formal Methods, Safety and Security**, University of Virginia

2022 - Fall   Teaching Assistant, **CS4710: Artificial Intelligence**, University of Virginia

2022 - Spring   Teaching Assistant, **CS6888: Program Analysis and its Applications**, University of Virginia

2021 - Fall   Teaching Assistant, **CS6888: Program Analysis and its Applications**, University of Virginia