Smart Computer Science Research Fellow with 2+ years of experience in Software Verification. Problem-solving mentality, creative algorithm designer, with a focus on efficient software implementation. Looking to leverage my skills in Software Verification to CPU Verification.

Giulio Garbi, PhD

Work Experience

Apr '22 | **Research Fellow**
– now | *University of Salerno and University of Molise*

- Design and implementation of data abstraction techniques and several verification schemas, e.g., bug detection and data-race detection.
- The data-race detection algorithm outperforms the top tools from the Software Verification Competition 2024, identifying 183/232 data races, while the best tool in the competition, Dartagnan, detected 165.
- Up to 100x speedup in bug detection in real-world code (e.g., lock-free data structures) compared to the unoptimized version without data abstraction.

Education

PhD in Computer Science
IMT School for Advanced Studies Lucca
Dissertation title: Automatic and Accurate Performance Prediction in Distributed Systems.
Grade: Excellent.

- Design and implementation of techniques for automatic derivation of performance models in distributed systems using deep learning and code analysis.
- The learned models allow for predictive analysis of performance indices e.g., response time and system utilization.
- 10% prediction errors over the considered performance indices on real case studies, while state-of-the-art approaches report errors of around 20% and 50%.

MSc in Computer Science
University of Turin
Dissertation title: Adaptive Advanced Driving Assistant systems in Automotive: the HoliDeS co-pilot.
Grade: Highest Honors (110/110, lode e menzione per l'eccezionale curriculum).

Visiting Period

DiffBlue

Extension of CBMC API to allow for approximate methods for program analysis.

Skills

- Experience in debugging complex systems using logging, debuggers, and counterexample analysis.
- Operating Systems: Unix-based OS, e.g. GNU/Linux and macOS.
- Programming Languages: C, Python, Java, C++, Assembly.
- Development environments: CLion and PyCharm.
- Collaborative development tools: Git.

Personal info

Address:
Via Giuseppe Allievo, 32
13047 San Germano Vercellese (VC)
Piemonte
Italy

E-mail:
giulio.garbi@gmail.com

Website:
https://giulio-garbi.github.io/

Phone number:
+39 333 53 53 875

Citizenship:
Italian

Languages

- **Italian** (native speaker)
- **English** (working language)
- **French** (basic)