JESSE COMER

University of Pennsylvania

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RESEARCH

I am broadly interested in applications of logic in computer science. There are currently two major strands to my research. The first is the specification and verification of *resilience properties* in critical software and cyber-physical systems. The second is in the development of algorithms for the repair of databases and database queries. In both strands, the fundamental underlying tools are *computational logic* and *formal methods*.

EDUCATION

PhD Student, Computer and Information Science, University of Pennsylvania. Aug 2023 - Present

M.S., Computer Science, University of Texas at Austin. Aug 2023

M.Sc., Logic, University of Amsterdam. Aug 2023

B.A., Economics, University of California, Los Angeles. Dec 2016

TEACHING

Mathematical Foundations of Computer Science. Instructor (UPenn). Summer 2024

Algorithms. Teaching Assistant (UT Austin). Spring 2023

Logic, Second Course. Tutor (UCLA). Spring 2016

Logic, First Course. Tutor (UCLA). Fall 2015, Winter 2016

OTHER WORK HISTORY

United States Marine Corps, Reserve. Field Artillery Officer. Jul 2021 - Present

- Currently serving as Battery Executive Officer.
- Previously held billets as Battalion Fire Direction Officer and Battalion Liaison Officer.

United States Marine Corps. Field Artillery Officer. Jan 2017 - Jul 2021

- Held billets as Fire Direction Officer, Platoon Commander, and Fire Support Officer.
- Deployed with the 15th Marine Expeditionary Unit.

JOURNAL ARTICLES

Craig Interpolation for Decidable First-Order Fragments.
B. ten Cate, J. Comer. *LMCS 21(3): 22:1-22:23*

CONFERENCE PAPERS

A Unifying Algorithm for Hierarchical Queries.
M. Abo Khamis, J. Comer, P. Kolaitis, S. Roy, V. Tannen. *PODS 2026* (To appear).

The Complexity of Finding Missing Answer Repairs.
J. Comer, V. Tannen. *ICDT 2026* (To appear).

Lovàsz Theorems for Modal Languages.
J. Comer. *AiML 2024*.

Time-Bounded Resilience.
T. Ban Kirigin, J. Comer, M. Kanovich, A. Scedrov, C. Talcott. *WRLA 2024*.

Craig Interpolation for Decidable First-Order Fragments.
B. ten Cate, J. Comer. *FoSSaCS 2024*.

BOOK CHAPTERS

Interpolation in First-Order Logic.
B. ten Cate, J. Comer. *In B. ten Cate, J. Jung, P. Koopmann, C. Wernhard, and F. Wolter (eds.), Theory and Applications of Craig Interpolation. Ubiquity Press, 2026* (To appear).

MASTER'S THESIS

Homomorphism Counts, Database Queries, and Modal Logics.
Committee: M. Gattinger (chair), B. ten Cate (supervisor), N. Bezhanishvili, R. de Haan. *ILLC 2023*.

TECHNICAL SKILLS

Python (incl. PyTorch/TensorFlow), Coq, Java