

# Robert Y. Lewis

## Contact Info

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## Positions

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2018 – 2020 **Vrije Universiteit**, Amsterdam, The Netherlands  
Postdoc, Theoretical Computer Science  
[Matryoshka](#) project

2012 – 2018 **Carnegie Mellon University**, Pittsburgh, PA, USA  
PhD, Pure and Applied Logic, 2018  
MS, Mathematics, 2015  
MS, Logic, Computation, and Methodology, 2014  
Supervisor: Jeremy Avigad

Summer 2016 **Wolfram Research**, Champaign, IL, USA  
Intern, Mathematica Algorithms R&D

Summer 2015 **University of Newcastle**, NSW, Australia  
Visiting student, [CARMA](#) Priority Research Centre

2010 – 2012 **St. Agnes Academy**, Houston, TX, USA  
Secondary School Teacher  
10<sup>th</sup> grade geometry, 11<sup>th</sup> and 12<sup>th</sup> grade pre-calculus, 12<sup>th</sup> grade AP Calculus AB

2006 – 2010 **Rice University**, Houston, TX, USA  
BA, Mathematics and Philosophy

## Publications

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Jeremy Avigad, Robert Y. Lewis, and Floris van Doorn. *Logic and Proof*. An online [interactive/static](#) textbook using the Lean theorem prover. Under development.

Robert Y. Lewis. *An extensible ad hoc interface between Lean and Mathematica*. In Dubois, C. and Paleo, B. W. eds., proceedings of Proof eXchange for Theorem Proving 2017 (EPTCS).

Jeremy Avigad, Robert Y. Lewis, and Cody Roux. *A heuristic prover for real inequalities*. (Journal version.) *Journal of Automated Reasoning* 56(3), 2016.

Jeremy Avigad, Robert Y. Lewis, and Cody Roux. *A heuristic prover for real inequalities*. In Klein, G. and Gamboa, R., eds., proceedings of Interactive Theorem Proving 2014 (Springer LNCS).

Leobardo Rosales, Robert Y. Lewis, et. al. *Energy-minimizing unit vector fields*. *Involve* 3(4), 2010.

## Selected Presentations

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*A heuristic method for formally verifying real inequalities.*

- [Matryoshka 2018](#), Amsterdam, The Netherlands. 06/2018.
- [Hales60](#), Pittsburgh, PA, USA. 06/2018. (Invited speaker.)

*Toward AI for Lean, via metaprogramming.*

- [AITP 2018: Artificial Intelligence in Theorem Proving](#), Aussois, France. 03/2018.

*The Lean theorem prover, for mathematicians.*

- Department of Mathematics foundations seminar, Western University, London, ON, Canada. 12/2017.

*An extensible ad hoc interface between Lean and Mathematica.*

- [International Congress on Mathematical Software](#), South Bend, IN, USA. 07/2018.
- [Proof eXchange for Theorem Proving workshop](#), Brasilia, Brazil. 09/2017.
- [Wolfram Technology Conference](#), Champaign, IL, USA. 10/2016.

*Automation and computation in the Lean theorem prover.*

- [Hammers for Type Theory workshop](#), IJCAR, Coimbra, Portugal. 07/2016.
- [AITP 2016: Artificial Intelligence in Theorem Proving](#), Obergurgl, Austria. 04/2016.
- TU München Logic and Verification Seminar, Munich, Germany. 03/2016.

*Algebra and analysis in the Lean theorem prover.*

- [MAP 2016: Effective Analysis](#), Marseille, France. 01/2016.

*Dependent types and the algebraic hierarchy.*

- [Workshop on Mathematics and Computation](#), Newcastle, NSW, Australia. 06/2015.

*A heuristic prover for real inequalities.*

- [ITP 2014: Interactive Theorem Proving](#), Vienna, Austria. 07/2014.
- [6th Podlasie Conference on Mathematics](#), Bialystok, Poland. 07/2014.
- CMU Graduate Research Sharing Forum, Pittsburgh, PA. 12/2013.

*Computers in mathematics: automated and interactive proofs.*

- CMU Summer School in Logic and Formal Epistemology. 06/2014.

*Energy-minimizing vector fields of unit length.*

- Rice University VIGRE Summer Seminar. 07/2009.

## Teaching

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All classes at Carnegie Mellon University, unless otherwise indicated.

Spring 2018	<i>Logic and Modeling</i> (VU, teaching assistant)
Fall 2016	80-211, <i>Logic and Mathematical Inquiry</i> (instructor)
Spring 2015	80-110, <i>Nature of Mathematical Reasoning</i> (instructor)
Fall 2014	21-257, <i>Models and Methods of Optimization</i> (teaching assistant)
Summer 2014	80-110, <i>Nature of Mathematical Reasoning</i> (instructor)
Spring 2014	80-311, <i>Undecidability and Incompleteness</i> (grader)
Fall 2013	80-610, <i>Formal Logic</i> (grader and guest lecturer)
2010 – 2012	<i>Geometry, Pre-calculus, AP Calculus AB</i> (St. Agnes Academy, instructor)
2007 – 2010	MATH 221/222/354, <i>Honors Calculus III/IV, Honors Linear Algebra</i> (Rice, grader)

## Students

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2018	Pablo Le Hénaff (MS intern, VU Amsterdam)
2018	Miko Kuijn (MS, VU Amsterdam)

## Service

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2019	Organizer, <a href="#">Lean Together</a> workshop
2018	Organizer, ICMS session <a href="#">Formal and Informal Mathematical Corpora</a>
2018	<a href="#">AISC</a> Program Committee
2015, 2016	CMU Dept. Philosophy Graduate Admissions Committee
2015	CMU Dept. Philosophy 30 <sup>th</sup> Anniversary Conference Planning Committee
2013 – 2017	Organizer, CMU Philosophy Dept. Graduate Research Sharing Forum
2011 – 2012	Coach and sponsor, St. Agnes Academy Engineering/Robotics Team
2008 – 2010	Coordinator and tutor, SRC Society of Academic Fellows, Rice University

## Awards, Grants, and Honors

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2017	<a href="#">Laboratory of Symbolic and Educational Computation</a> research fellowship
2017	<a href="#">Future Faculty</a> , Eberly Center for Teaching Excellence & Educational Innovation
2015 – 2016	William S. Dietrich II <a href="#">Presidential PhD Fellowship</a>
2014	Honorable Mention, NSF Graduate Research Fellowship Program