

# Daniel Barter

- website: [danielbarter.github.io](http://danielbarter.github.io)
- email: [danielbarter@gmail.com](mailto:danielbarter@gmail.com)
- citizenship: Australia

I have a PhD in mathematics and want to be a software engineer. I want to spend my time working on hard problems with a team that values creativity and ingenuity.

## Education

- B.Sc with First Class Honours and University Medal, Pure Mathematics, University of Sydney, 2008-2011.
- PhD, Pure Mathematics, University of Michigan, 2012 - 2017. Specialized in category theory and representation theory. Thesis: [Some Remarks about the Interaction between Quantum Algebra and Representation Stability](#).

## Employment

- University of Sydney. 2011-2012. Tutor for calculus 1 and 2. Supervised problem sessions and graded homework/exams.
- University of Michigan. 2012-2016. Graduate student instructor for calculus 1, 2 and 3. Lectured to classes of 30 three times a week. Held office hours. Helped students use Mathematica. Graded homework/exams.

## Independent Study

- Pure Mathematics: **differential geometry, representation theory and category theory**: I am particularly interested in the interaction between these subjects and physics. Recently, I have been thinking about the relationship between tensor categories, classical representation theory and topological quantum computing.
- Computer Science: **functional programming, assembly, UNIX, machine learning**: I have read [SICP](#) and solved all of the exercises. I wrote a [simulator for Knuth's MIX machine](#) to learn how computers execute programs. I have been using GNU/Linux as my main operating system since 2012 and am acquainted with the standard tools and how to combine them. I understand the basics of machine learning.

## Preprints

- Noetherianity and rooted trees. [arXiv:1509.04228](#)
- A remark about 6j symbols and young semi-normal form. [arXiv:1610.05248](#)
- Computing the minimal model for the quantum symmetric algebra. [arXiv:1610.05204](#)
- Eigenvalues of rotations and braids in spherical fusion categories. Joint with Corey Jones and Henry Tucker. [arXiv:1611.00071](#)

## Invited Talks

- Michigan theoretical computer science seminar, *Tensor rank and stability in representation theory*
- Berkeley combinatorics seminar, *Combinatorial categories, configuration spaces and tensorial species*