John Calabrese

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Education

- **University of Oxford** — Oxford, UK
  PhD in Pure Mathematics. — *2013*
- **Università di Pisa** — Pisa, Italy
  Laurea Specialistica in Mathematics, cum laude. — *2009*
  Laurea Triennale in Mathematics, cum laude. — *2008*

Skills

- Python, SQL.
- Pytorch, pandas, numpy, spacy, scikit-learn, jupyter, git, LaTeX.
- Advanced Mathematics (Linear Algebra, Topology, Abstract Algebra), Machine Learning, Deep Learning (Convolutional Neural Networks, Recurrent Neural Networks).

Experience

- **Insight Data Science** — New York, NY
  Data Science Fellow — *2019 - present*
  - Developed a Natural Language AI (NLP) that generates 'shower thoughts' for social media, and deployed it as a bot on twitter. twitter.com/deepThoughtsAI
  - Bot was hosted on AWS, regularly updated its status, interacted with users by responding to mentions.
  - Built from scratch different architectures in PyTorch: character-based Recurrent Neural Network (RNN), word-based RNN with pre-trained GloVe embedding, Transformer.
  - Trained neural networks on a dataset of reddit posts, via Google Colab's GPU. github.com/johncalab/deepShowerThoughts
- **MD Anderson Cancer Center** — Houston, TX
  Research Investigator — *2019*
  - Built Convolutional Neural Networks as part of a pilot study to develop a tool for image segmentation of tumors.
  - Tested two different models on a public dataset of brain MRI scans (BRATS 2017), coded in PyTorch, and trained on a remote server using a GPU.
  - Code, models, and notebooks available at github.com/johncalab/pytorchbrats.
- **Rice University** — Houston, TX
  G.C. Evans Instructor of Mathematics and National Science Foundation Research Fellow — *2014 - 2018*
  - Published nine research articles in top peer-reviewed mathematical journals, as an independent researcher in pure Math. Focused on the enumeration of 'special' curves in six-dimensional manifolds defined by polynomial equations.
  - Solved the 'Crepant Resolution Conjecture', a major outstanding problem in Donaldson–Thomas theory, an area sitting between Algebraic Geometry and String Theory. arxiv.org/abs/1810.06581
  - Secured two funding grants for research, one grant for travel, and one for a regional conference ($207k total).
  - Delivered sixty-two research talks at various conferences and institutions, including: MIT, Columbia, Brown, and the Institute of Advanced Study at Princeton.
  - Lead professor for eight courses across four semesters, from undergraduate to advanced graduate (including Linear Algebra, Multivariable Calculus, Complex Analysis, and Representation Theory). Invited twice to a 'best professor dinner'. Coordinated teams of TAs, designed one course from scratch, and written lecture notes for three courses (available at johncalab.github.io).

Awards

- National Science Foundation, Conference Grant. — *2017*
- National Science Foundation, Mathematical Sciences Postdoctoral Research Fellowship. — *2015*
  (43 awarded in 2015 across all of mathematics, nationwide)
- Engineering and Physical Sciences Research Council (UK), Doctoral Prize Fellowship (Imperial College London). — *2013*
  (2 awarded in 2013 across all of mathematics at Imperial College)