

# GUILHERME LIMA, Ph.D.

## PERSONAL INFORMATION

---

First name Guilherme Frederico  
Surname Lima de Carvalho e Silva  
Nationality Brazil  
Address 3949 Shenandoah Avenue, St Louis, MO, 63110  
email [guilherme.frederico.lima@gmail.com](mailto:guilherme.frederico.lima@gmail.com)  
website <https://gflima.net/>  
GitHub <https://github.com/GuilhermeFLima>  
Phone +1 (907) 414 7973

## EDUCATION

---

Sept 2016 **PhD in Pure Mathematics**  
Institution University of Cambridge, UK  
Thesis title *Cartesian and Finite-Product-Preserving  
Essential Inclusions of Grothendieck Toposes*  
Supervisor Prof. Peter Johnstone.

Jun 2008 **Master of Mathematics**  
Institution Pontifícia Universidade Católica do Rio de Janeiro - Brazil  
Dissertation title *Sheaves and Topos Theory*  
Supervisor Prof. George Svetlichny.

Jul 2006 **Bachelor's degree in Pure Mathematics**  
Pontifícia Universidade Católica do Rio de Janeiro - Brazil

## ADDITIONAL SKILLS

---

Python (Scikit-learn, Pandas, NumPy, SciPy, Matplotlib), SQL, Git.

## ACADEMIC INTERESTS

---

Main Machine Learning, Artificial Intelligence, Natural Language Processing,  
Cluster Analysis, applications of Category Theory to Data Science.

Other Game Theory.

## JOB EXPERIENCE

---

2017 – 2019, **Data Science Consultant**

2021 – 2022 Collaborated with researchers from the University of Strasbourg on a project where machine learning and natural language processing techniques were used for psychiatric classification of patients with bipolar disorder.

2019 – 2021 **Law Office of Brooke Browning Lima**

Co-Founder & Senior Manager

Managed data systems, including budget and financial management databases.

Jan 2010 – Apr 2017 **Supervisor for Cambridge Part III courses**

Employed by different constituent colleges of the University of Cambridge to tutor individually or in classes for Masters level courses.

Courses:

- **Category Theory**, since 2010
- **Topos Theory**, since 2012

Oct 2012 – Apr 2017 **Supervisor for Cambridge Mathematical Tripos**

Employed by different constituent colleges of the University of Cambridge to teach undergraduates in pairs, parallel to their lecture courses.

Courses:

- **Numbers and Sets** (first year), 2015
- **Metric and Topological Spaces** (second year), since 2012
- **Linear Algebra** (second year), 2016
- **Groups, Rings and Modules** (second year), 2016
- **Logic and Set Theory** (third year), 2013

Colleges:

Trinity College, Emmanuel College, Christ's College,  
Churchill College, Queens' College, Newnham College,  
Murray Edwards College.

Feb 2009 – Jun 2009 **Calculus Lecturer** for Pontifícia Universidade Católica do Rio de Janeiro, Brazil

## TALKS

---

July 2017 **International Category Theory Conference 2017**

University of British Columbia, Vancouver, Canada

- Presentation: *Duality theorems for essential inclusions of Grothendieck toposes*
- May 2016 **100th Peripatetic Seminar on Sheaves and Logic**  
University of Cambridge, UK  
Presentation: *Pullbacks of Essential Inclusions of Grothendieck Toposes*
- Nov 2015 **Topos à l'IHES**  
Institut des Haute Études Scientifiques, Paris, France  
Presentation: *From Essential Inclusions to Local Geometric Morphisms*
- Jun 2015 **International Category Theory Conference 2015**  
University of Aveiro, Portugal  
Presentation: *Site characterisations for Local Geometric Morphisms*
- Jul 2013 **International Category Theory Conference 2013**  
Macquarie University, Sydney, Australia  
Presentation: *Surjections of Grothendieck Toposes*
- Jun 2013 **Young Researchers in Mathematics 2013**  
University of Edinburgh, UK  
Presentation: *Exponentiable Toposes*
- Apr 2012 **Young Researchers in Mathematics 2012**  
Bristol University, UK  
Presentation: *An Introduction to Classifying Toposes*
- Apr 2011 **Young Researchers in Mathematics 2011**  
Warwick University, UK  
Presentation: *Topos Theory*

## SCHOLARSHIPS AND AWARDS

---

- 2016 Cambridge Philosophical Society Research Studentship,  
to conclude promising piece of research
- 2011, 2013 DPMMS travel grants for conferences in Vancouver  
and Sydney
- 2010 Smith-Knight and Rayleigh-Knight essay competition 3rd prize
- 2009 Cambridge Trusts International Scholarship  
3 year full PhD scholarship
- 2007 Bolsa Aluno Nota Dez (Grade A Student Scholarship)  
2 year Masters scholarship

## SEMINAR ORGANISATION

---

Oct 2012 - Jan 2015 **Junior Category Theory Seminar**

Created and ran the weekly seminar, which was presented and attended by Masters and PhD students of the University of Cambridge.

Oct 2012 - Mar 2014 **Joint Category Theory and Computer Science Seminar Series**

Created and organised the seminar series in 2012 and 2013.

Talks were given by PhD students of both Pure Maths and Computer Science departments of the University of Cambridge.

## ADDITIONAL ACTIVITIES

---

2017 - 2021 Head coach for the **Butte Elementary Chess Club** and **Butte Elementary Chess Team**.

2014 Created and assumed the role of president of the **Christ's College Volleyball Club**, affiliated to the Christ's College Sports Society, in the University of Cambridge.

2010 Co-founded and assumed the role of vice-president (2010) of the **Cambridge University Brazilian Society**, which organises academic and cultural events promoting Brazilian culture in Cambridge.

**Languages:** Portuguese (native), English (fluent), French (intermediate).