Fosco Loregian

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Category theory and everything about it. (last update: 31/05/2024)

Current Position

Researcher
Tallinna Tehnikaülikooli Küberneetika Instituut
Aug 2023 | now — Castrum Danorum, EE

- Research, teaching, organization of seminars.

Freelance consultant at *PlantingSpace*
Jan 2022 | now — remote

- Research oriented towards categorical probability theory and implementations thereof.

Past Positions

Postdoctoral fellow positions held at
Tallinna Tehnikaülikooli Küberneetika Instituut
Jan 2020 | Aug 2023 — Castrum Danorum, EE

Centro de Matemática da Universidade de Coimbra
Jul 2019 | Dec 2019 — Aeminium, PT

Max-Planck-Institut für Mathematik
Sep 2018 | Feb 2019 — Bonna, D

Masarykova univerzita
Mar 2017 | Apr 2018 — Bruna, CZ

University of Western Ontario
Sep 2016 | Nov 2016 — Lunden, CA

Education

Ph.D. in Mathematics[1]
Scuola Internazionale Superiore di Studi Avanzati
Oct 2012 | Jun 2016 — Tergeste, IT

M.Sc. in Mathematics
Università degli studi di Padova
Oct 2010 | Jul 2012 — Pàdoa, IT

B.Sc. in Mathematics
Università degli studi di Padova
Jan 2008 | Jun 2010 — Pàdoa, IT

Publications

[1] G. Boccali, A. Laretto, —, and S. Luneia, *Bicategories of Automata, Automata in Bicategories*, in *Proceedings of the 6th International Conference on Applied Category Theory 2023*, Vol. 397 (Open Publishing Association, 2023), pp. 1–19

[2] G. Boccali, A. Laretto, —, and S. Luneia, *Completeness for Categories of Generalized Automata*, in *10th Conference on Algebra and Coalgebra in Computer Science (CALCO 2023)*, Vol. 270 (2023), pp. 1–14

[3] B. Clarke, D. Elkins, J. Gibbons, —, B. Milewski, E. Pillmore, and M. Román, *Profunctor Optics, A Categorical Update*, (2020)

[4] F. Genovese, —, and D. Palombi, *Escrows Are Optics*, (2021)

[5] F. Loregian and T. Trimble, *Differential 2-Rigs*, Electronic Proceedings in Theoretical Computer Science **380**, 159 (2023)

[6] F. Genovese, —, and C. Puca, *Fibrational Linguistics (Fiblang): Language Acquisition*, Electronic Proceedings in Theoretical Computer Science **380**, 224 (2023)

[7] I. Di Liberti and —, *Accessibility and Presentability in 2-Categories*, Journal of Pure and Applied Algebra **227**, 107155 (2023)

[8] F. Genovese, —, and D. Palombi, *A Categorical Semantics for Bounded Petri Nets*, Electronic Proceedings in Theoretical Computer Science **372**, 59 (2022)

[9] F. Genovese, —, and D. Palombi, *A Categorical Semantics for Hierarchical Petri Nets*, Electronic Proceedings in Theoretical Computer Science **350**, 51 (2021)

[10] F. Genovese, —, and D. Palombi, *Nets with Mana: A Framework for Chemical Reaction Modelling*, Graph Transformation 185 (2021)

[11] — and E. de Oliveira Santos, *Coends of Higher Arity*, Applied Categorical Structures **30**, 173 (2022)

[12] I. Di Liberti, —, C. Nester, and P. Sobociński, *Functorial Semantics for Partial Theories*, Proc. ACM Program. Lang. **5**, (2021)

[13] — and S. Virili, *Triangulated Factorization Systems and t-Structures*, Journal of Algebra **550**, 219 (2020)

[14] — and E. Riehl, *Categorical Notions of Fibration*, Expositiones Mathematicae **38**, 496 (2020)

[15] D. Fiorenza, —, and G. Marchetti, *Hearts and Towers in Stable ∞-Categories*, Journal of Homotopy and Related Structures **14**, 993 (2019)

[1] Technically "Ph.D. in Geometry", bt that's probably derogatory towards true geometers.

[16] —, *A Standard Theorem on Adjunctions in Two Variables*, Preprints of the MPIM (2018)

[17] —, *A Fubini Rule for Infinity-Coends*, Preprints of the MPIM (2018)

[18] I. Di Liberti and —, *Homotopical Algebra Is Not Concrete*, Journal of Homotopy and Related Structures **13**, 673 (2018)

[19] —, *(Co)end Calculus* (Cambridge University Press, 2021)

[20] D. Fiorenza and —, *t-Structures Are Normal Torsion Theories*, Applied Categorical Structures **24**, 181 (2016)

[21] F. Loregian, *Automata and Coalgebras in Categories of Species*, To Appear in Proceedings of CMCS2024. (2024)

Preprints

- —, *Rosen's No-Go Theorem for Regular Categories*, *arXiv:2012.11648* (2021)
- D. Dentamaro and —, Categorical Ontology I - Existence, (2020)
- D. Dentamaro and —, Functorial *Erkennen*, (2020)
- I. D. Liberti and —, *On the Unicity of Formal Category Theories*, *arXiv:1901.01594* (2019)
- —, *Localization Theory for Derivators*, *arXiv:1802.08193* (2018)
- D. Fiorenza and —, *Recollements in Stable ∞-Categories*, *arXiv:1507.03913* (2016)

Teaching and stuff

Courses

ITI9200 - Introduction to Category Theory

A course on basic category theory; at the *course webpage* you find a diary of the lectures and study material.

2020—now; Spring term — Castrum Danorum, EE

Elements of Finite Mathematics

Techniques of counting, probability, discrete and continuous random variables.

1st term 2016 — Lunden, CA

Organization of Events

Organiser of ItaCa 2024

The annual meeting of the community of *ItaCa*.

Dec 2024 — Pàdoa, IT

Organiser of ItaCa 2023

The annual meeting of the community of *ItaCa*.

Dec 2023 — Turin, IT

Organiser of ItaCa Fest

An online webinar aimed to gather the community of *ItaCa*.

2020—now — online

PSSL 103 - Brno

I have been one of the organizers of 103rd Peripathetic Seminar on Sheaves and Logic.

Apr 2018 — Bruna, CZ

Supervision of students

Ph.D. students

I cosupervise **A. Laretto** (former SIGPLAN LT mentee) together with *N. Veltri*.

mentor for the SIGPLAN-M

Mentee: **A. Laretto**. We worked in formalization in Agda of various results in category theory.

supervisor B.Sc., M.Sc. in Mathematics, internships

- **G. Ronchi** (*Adjoint functors*)
- **G. Sorgente** (*Formal theory of promonads*)
- **T. Massacrier** (*From combinatorial species to general differential 2-rigs*)

Other activities

Appointee for the Adjoint school 2019

A webinar and online applied Category Theory reading course. The project was *Traversal optics and profunctors*. Led to the development of *arXiv:2001.07488*.

Mar 2019 | Jun 2019 — online

Appointee for Kan Extension Seminar I

A webinar and online Category Theory reading course. Guided by *E. Riehl*

Jan 2014 | Jul 2014 — online

Sparse skills

I like the art of crafting books and drawing maps; this is not unrelated to my love for Mathematics.

I am a pretty decent *TeXnic*.

I became a relatively frequent contributor of *agda-categories*. Agda is... well, pain.

I like languages, natural and artificial (*mi ŝatus verki vortaron al matematiko, kun terminoj el teoria kategorioj*; *mina õpin eesti keelt, aeglaselt*; *jeg liker Norsk, men jeg liker Maria Franz mer*); again, this is not unrelated to my love for Mathematics.