

TOMÁŠ JAKL – CURRICULUM VITAE

CONTACT

Address: Department of Computer Science and Technology
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EMPLOYMENT

- **February 2020 – present, Research Associate (postdoc)**
University of Cambridge, EPSRC project *Resources and co-Resources: a junction between categorical semantics, model theory and descriptive complexity*
Principal Investigator: Prof. Anuj Dawar
- **April 2018 – February 2020, Chercheur, contrat durée dét. (postdoc)**
CNRS and Université Côte d'Azur, ERC project *DuaLL*
Principal Investigator: Prof. Mai Gehrke
- **January 2018 – March 2018, Teaching Associate (lecturer)**
University of Birmingham

EDUCATION

- **2013 – February 2018, joint PhD degree**
Charles University in Prague, Faculty of Mathematics and Physics and
University of Birmingham, School of Computer Science.
Thesis title: *d-Frames as algebraic duals of bitopological spaces*
Supervisors: Prof. Achim Jung, Prof. Aleš Pultr
- **2011 – 2013, Master's degree (summa cum laudae)**
Charles University in Prague, Faculty of Mathematics and Physics.
Programme of Study: Discrete models and algorithms.
Master thesis: *Some point-free aspects of connectedness*
Supervisor: Prof. Aleš Pultr
- **2008 – 2011, Bachelor's degree**
Charles University in Prague, Faculty of Mathematics and Physics.
Programme of Study: General Computer Science.
Bachelor thesis: *Arimaa challenge-comparison, study of MCTS versus alpha-beta methods*
Supervisor: Dr. Vladan Majerech

PUBLICATIONS

IN PREPARATION

- **A game comonadic account of Courcelle and Feferman–Vaught–Mostowski theorems**, submitted.
(Tomáš Jakl, Dan Marsden, Nihil Shah)
- **Discrete Density Comonads and Graph Parameters**, accepted at CMCS 2022 and will appear in Springer LNCS.
(Samson Abramsky, Tomáš Jakl, Thomas Paine)

INVITED JOURNAL PAPERS

- **A duality theoretic view on limits of finite structures (Extended version)**
(Mai Gehrke, Tomáš Jakl, Luca Reggio)
Logic in Computer Science (FoSSaCS 2020 Special Issue). Volume 18, Issue 1, 2022.
- **A Cook’s tour of duality in logic: from quantifiers, through Vietoris, to measures.**
(Mai Gehrke, Tomáš Jakl, Luca Reggio)
To appear in Outstanding Contribution to Logic (Springer), arXiv:2007.15415.

PAPERS IN REFEREED CONFERENCE PROCEEDINGS

- **Lovász-type Theorems and Game Comonads**
(Anuj Dawar, Tomáš Jakl, Luca Reggio)
Proceedings of the 36th Annual ACM/IEEE Symposium on Logic in Computer Science, LICS 2021.
- **A Duality Theoretic View on Limits of Finite Structures**
(Mai Gehrke, Tomáš Jakl, Luca Reggio)
Foundations of Software Science and Computation Structures - 23rd International Conference, FOSSACS 2020.
- **Free Constructions and Coproducts of d-Frames**
(Tomáš Jakl, Achim Jung)
7th Conference on Algebra and Coalgebra in Computer Science (CALCO), LIPIcs, 2017.
- **Bitopology and four-valued logic**
(Tomáš Jakl, Achim Jung, Aleš Pultr)
Proceedings of the 32nd Annual Conference on Mathematical Foundations of Programming Semantics (MFPS), ENTCS, 2016.

REFEREED JOURNAL PAPERS

- **Canonical extensions of locally compact frames**
(Tomáš Jakl)
Topology and its Applications, Volume 273, 2020.
- **Quotients of d-frames**
(Tomáš Jakl, Achim Jung, Aleš Pultr)
Applied Categorical Structures, Volume 27, 2019.
- **Tightness relative to some (co)reflections in topology**
(Richard N. Balla, Bernhard Banaschewski, Tomáš Jakl, Aleš Pultr, Joanne Walters-Waylande)
Quaestiones Mathematicae, Volume 3, 2015.

THESES

- **d-Frames as algebraic duals of bitopological spaces**
Charles University and University of Birmingham (Ph.D. thesis), 2017.
- **Some point-free aspects of connectedness**
Charles University (Master thesis), 2013.
- **Arimaa challenge - comparison study of MCTS versus alpha-beta methods**
Charles University (Bachelor thesis), 2011.

COMMITTEE WORK

- Topology, Algebra, and Categories in Logic 2022 (TACL 2022)
<http://www.mat.uc.pt/~tacl2021/>
Programme Committee
- Structure meets Power Workshop 2022 (ICALP 2022 affiliated)
<https://www.cst.cam.ac.uk/conference/structure-meets-power-2022>
Organising Committee
- Structure meets Power Workshop 2021 (LICS 2021 affiliated)
<https://www.cst.cam.ac.uk/conference/structure-meets-power-2021>
Organising Committee
- Topology, Algebra, and Categories in Logic 2019 (TACL 2019)
<https://math.unice.fr/tacl/2019/>
Organising Committee
- TACL 2019 summer school
<https://math.unice.fr/tacl/2019/school/>
Organising Committee

LECTURER EXPERIENCE

- **In 2018:**

Data Structures and Algorithms (University of Birmingham, spring term)

- Approx. 180 students of mixed study background (either enrolled to the MSc course or in the Year in Computer Science).
- Redesigned the course from the ground up: previously 2 hours of lectures per week changed into 1 hour of lecture and 1 hour of exercise classes per week.
- Preparation of new course material, materials for exercise classes, and managing of two teaching assistants.
- Preparation of exam papers.

- **In 2022 (upcoming):**

Relating Structure to Power: An Invitation to Game Comonads (a course at the 33rd European Summer School in Logic, Language and Information, ESLLI 2022)

- as the only course of ESLLI 2022, sponsored by the European Association for Computer Science Logic (EACSL)

TEACHING ASSISTANT EXPERIENCE

- **2021–2022:**

Denotational Semantics (University of Cambridge, Michaelmas term)

- **2020–2021:**

Complexity Theory (University of Cambridge, Easter term)

Denotational Semantics (University of Cambridge, Michaelmas term)

- **2017–2018:**

Functional Programming (University of Birmingham, autumn term)

- **2016–2017:**

Models of Computation (University of Birmingham, spring term)

- **2015–2016:**

Models of Computation (University of Birmingham, spring term)

Functional Programming (University of Birmingham, autumn term)

- **2014–2015:**

Functional Programming (University of Birmingham, autumn term)

- **2013–2014:**

Linear Algebra I (Charles University, winter term)

TALKS

INVITED

- Yorkshire and Midlands Category Theory Seminar, <http://www1.maths.leeds.ac.uk/~pmtng/yamcats-26.html>, 10 January 2022
- Theory Group Seminar at the University of Birmingham, <http://talks.bham.ac.uk/talk/index/4310>, 25 September 2020
- Online Workshop on Resources and Co-Resources, <https://www.cst.cam.ac.uk/conference/coresources-2020/online-workshop>, 26 March 2020
- International Workshop on Topological Methods in Logic VI (ToLo), Tbilisi, <http://rmi.tsu.ge/to1o6/>, 2 July 2018
- Prague Seminar on Paraconsistent Logic II, Prague, <http://www.cs.cas.cz/sedlar/psp2.html>, 25 June 2017
- Heriot-Watt University seminar, Edinburgh, 18 August 2016
- International Workshop on Topological Methods in Logic V (ToLo), Tbilisi, <http://rmi.tsu.ge/to1o5/>, 15 June 2016
- Algebra|Coalgebra Seminar, Amsterdam, <http://www.iillc.uva.nl/alg-coalg/>, 4 May 2016
- KAFKA Seminar, Prague, <http://www.karlin.mff.cuni.cz/~holub/kafka/>, 1 April 2015

CONTRIBUTED

- Applied Category Theory 2021 (ACT 2021), <https://www.cl.cam.ac.uk/events/act2021/>, 6 July 2021
- 24th International Conference on Foundations of Software Science and Computation Structures (FoSSaCS 2021), <https://etaps.org/2021/fossacs>, 1 April 2021
- Logic Colloquium 2019, Prague, <https://1c2019.cz/>, 12 August 2019
- Workshop on Algebra, Logic and Topology, Coimbra, <http://www.mat.uc.pt/~workalt/>, 27 September 2018
- Topology, Algebra, and Categories in Logic (TACL), Prague, <http://www.cs.cas.cz/tac12017/>, 30 June 2017
- Algebra and Coalgebra in Computer Science (CALCO), Ljubljana, <http://coalg.org/mfps-calco2017/>, 14 June 2017
- Asymmetric Topology section on 31th Summer Conference on Topology and its Applications, Leicester, 2 August 2016
- Mathematical Foundations of Programming Semantics XXXII (MFPS), Pittsburgh, <http://conferences.au.dk/mfps-2016/>, 24 May 2016

These list do not include various talks given for the research groups I was affiliated with, at the time of working or studying there. Namely, I have also given a number of talks for the Programming, Logic, and Semantics Group at the University of Cambridge, the Theory Group Lab Lunch Seminar at the University of Birmingham, and for the Dualité de Stone, langages formels et logique seminars at the Université Côte d'Azur (in Nice, France).

REFEREEING WORK

PAPER REVIEWS

European Journal of Combinatorics (2021); Journal of Logical and Algebraic Methods in Programming (2021); Logical Methods in Computer Science (2018, 2020); Topology and its Applications (2019, 2020, 2021); Logic in Computer Science (2019, 2019); Rocky Mountain Journal of Mathematics (2019); Houston Journal of Mathematics (2019, 2021); Mathematical Structures in Computer Science (2019); Transactions on Computational Logic (2020); Outstanding Contributions to Logic (2020); Studia Logica (2019); Relational and Algebraic Methods in Computer Science (2019).

GRANT REFEREEING

The Czech Science Foundation, GAČR (2021).

OTHER

- Maintaining the TACL series website <https://math.unice.fr/tacl/>.
- Co-founded the Category Theory Reading Group (CARGO) in 2015, aimed for Ph.D. students of the School of Computer Science at the University of Birmingham.
- Received support of Fond mobility (Charles University) in 2016 and 2017.
- Currently leading the Logic and Algorithms Reading Group in Cambridge.
- Engaged, one child.