

Lalla MOUATADID

lalla@cs.toronto.edu www.cs.toronto.edu/~lalla

EDUCATION

- 2014-2018 | **University of Toronto.**
PhD, Theoretical Computer Science.
Efficient Algorithms on Cocomparability Graphs via Vertex Orderings.
Supervisors: Derek Corneil & Allan Borodin.
- 2012-2014 | **University of Toronto.**
MSc, Theoretical Computer Science.
Linear Time Algorithms on Cocomparability Graphs.
Supervisors: Derek Corneil & Allan Borodin.
- 2006-2010 | **Vancouver Island University.**
BSc, Computer Science, minor in Maths.
Gray Code Generation of Ideals of Crown Posets in CAT.
Supervisor: Gara Pruesse.
Graduated with *distinction / magna cum laude*.

PROFESSIONAL EXPERIENCE

- Present* | **Staff Research Scientist**, The AI Research Center.
Focus: Graph Algorithms, Combinatorics, Optimization, .
- 2014, 2016 | **Adjunct Professor**: U of Toronto, Computer Science Department.
CS373: Algorithm Design, Analysis & Complexity. 100+ students.
- 2009 - 2012 | **Software Engineer**, NISA.
Nanaimo, BC, Canada.

SELECTED AWARD & FELLOWSHIPS

- 2019-2021 | **NSERC Postdoc Fellowship - Declined** .
- 2017-2018 | Alfred B. Lehman Graduate Scholarship.
- 2015-2018 | **NSERC Post Graduate Scholarship - Doctoral**.
- 2012-2017 | Graduate Student Fellowship, Computer Science, U. of Toronto.
- 2007-2009 | Math Association of America sponsorship to present my bachelor's thesis.
Vancouver Island University Academic Excellence Award.
Ina Roelants Memorial Award.
David Jones Scholarship for Leadership and Volunteer Work.

PUBLICATIONS

- 2023 | **A New Graph Parameter to Measure Linearity.**
Pierre Charbit, Michel Habib, Lalla Mouatadid, & Reza Naserasr.
Journal: Journal of Graph Theory. Vol. 103, issue 3, pp 462-485.
- 2022 | **A general algorithmic scheme for combinatorial decompositions with application to modular decompositions of hypergraphs.**
Michel Habib, Fabien de Montgolfier, Lalla Mouatadid, Mengchuan Zou.
Journal: Theoretical Computer Science. Vol. 923, pp 56-73.
Conference: IWOCA 2019. **Invited to the Special Issue .**
- Actionable Recommendations With Hybrid AI.**
Sudhir Agarwal, Lalla Mouatadid, Anu Sreepathy.
Conference: AAI Spring Symposium: MAKE 2022.
- Mining Frequent Patterns on Knowledge Graphs.**
Lalla Mouatadid.
Conference: WSDM 2022.
- 2020 | **Maximum Induced Matching Algorithms via Vertex Ordering Characterizations.**
Michel Habib & Lalla Mouatadid.
Journal: Algorithmica. Vol. 82, issue 2, pp 260-278.
Poster: STOC 2017.
Conference: ISAAC 2017 **Invited to the Special Issue .**
- Approximating Modular Decomposition is Hard.**
Michel Habib, Lalla Mouatadid, Mengchuan Zou.
Conference: CALDAM.
- 2017 | **A New Graph Parameter to Measure Linearity.**
Pierre Charbit, Michel Habib, Lalla Mouatadid, & Reza Naserasr.
Conference: COCOA.
Journal: Submitted to Journal of Graph Theory.
- 2016 | **A Linear Time Algorithm to Compute a Max Weighted Independent Set on Comparability Graphs.**
Ekkehard Köhler & Lalla Mouatadid.
Journal: Information Processing Letters. Vol. 116, issue 6, pp 391-395.
- 2014 | **Linear Time LexDFS on Comparability Graphs.**
Ekkehard Köhler & Lalla Mouatadid.
Conference: SWAT. pp 319-330. Springer.

(α, β) –Modules in Graphs.

Michel Habib, Lalla Mouatadid, Éric Sopena, Mengchuan Zou.

Graph Searches and Geometric Convexities in Graphs.

Results presented at ICGT 2018.

Feodor Dragan, Michel Habib, & Lalla Mouatadid.

The LexDFS Structure of Posets.

Derek Corneil, Lalla Mouatadid, & Gara Pruesse.

Path Graphs, Clique Trees, and Flowers.

Lalla Mouatadid and Robert Robere.

A Scalable Technique for Weak-Supervised Learning with Domain Constraints.

Sudhir Agarwal, Anu Sreepathy, Lalla Mouatadid.

RE2: Region-Aware Relation Extraction from Visually Rich Documents.

Pritika Ramu, Sijia Wang, Lalla Mouatadid, Joy Rimchala, Lifu Huang.

SELECTED TALKS

- 2021 | **ICALP, GWP: From Structure to Algorithms.**
Measuring Linear Structure on Graphs.
- CanADAM.**
 (α, β) -Modules in Graphs.
- 2019 | **Stanford University, Theory Seminar.**
Graph Searches on Structured Families of Graphs.
- GROW, Vienna, Austria.**
A General Algorithmic Scheme for Modular Decompositions of Hypergraphs.
- 2018 | **NC State University, Theory Seminar.**
Graph Searches on Structured Families of Graphs.
- Dagstuhl Seminar on High Performance Graph Algorithms.**
A Toolbox to Extract Structure From Graphs.
- SIAM Discrete Math, Denver, U.S.A. .**
Maximum Induced Matching Algorithms via Vertex Orderings.
- 2017 | **Princeton University, Discrete Math Seminar.**
Graph Searches on Structured Families of Graphs.
- Shanghai Jiao Tong University, Shanghai, China.**
Graph Searches on Structured Families of Graphs.
- ISAAC, Phuket, Thailand.**
Maximum Induced Matching Algorithms via Vertex Ordering Characterizations.
- COCOA, Shanghai, China.**
A New Graph Parameter to Measure Linearity.
- STOC, Montreal, Canada.**
Maximum Induced Matching on Cocomparability Graphs - Poster.
- 2016 | **Fourth Annual Heidelberg Laureate Forum, Heidelberg, Germany.**
Graph Searches on Structured Families of Graphs - Poster.
- Search Games: Theory and Algorithms, Leiden, The Netherlands.**
Graph Searches on Structured Families of Graphs.
- 2015 | **University Paris Diderot, IRIF, Paris, France.**
Path Graphs, Clique Trees, and Flowers.
- 2014 | **Southeastern International Conference on Combinatorics, Boca Raton, U.S.A. .**
Linear Time LexDFS on Cocomparability Graphs.

RESEARCH VISITS

Summer 2015 | **University Paris Diderot, IRIF, France.**
Brandenburgische Technische Universität, Germany.

Summer 2017 | **University Paris Diderot, IRIF, France.**

TEACHING EXPERIENCE

2013-2018 | **Teaching Assistant, U. of Toronto:**

- CSC 2404: Computability & Logic.
- CSC 2420: Algorithm Design, Analysis, & Theory.
- CSC 473: Advanced Algorithm Design
- CSC 373: Algorithm Design, Analysis, & Complexity.
- CSC 263: Data Structures and Analysis.
- CSC 236: Introduction to Theory of Computation.
- CSC 165: Mathematical Expression & Reasoning for Computer Science.

2014, 2016 | **Course Instructor, U. of Toronto:**

- CSC 373: Algorithm Design, Analysis, & Complexity. *1st* & *2nd* offering.

PROFESSIONAL SERVICE

2013-Present | **Reviewer:**

- Journal of Graph Theory.
- SIAM Discrete Mathematics.
- Discrete Applied Mathematics.
- Journal of Combinatorics.
- Discrete Mathematics & Theoretical Computer Science.
- RAIRO - Operation Research.
- Information Processing Letters.
- International Workshop on Graph-Theoretic Concepts (WG).

2017 | **Program Committee Member - GROW 2017.**

Girls in STEM Workshop, U. of Toronto.

- Organized and ran a workshop for girls in grades 6 to 9.
- A collaboration with the U of T Math Department.

2016 | **Lead Mentor, Undergraduate Summer Research Program, U. of Toronto.**

- Weekly meetings mentoring and guiding undergraduate students in their summer research projects.

SKILLS

- **Technical:** · Python (preferred), C++, MATLAB, Java, GraphQL, React.
- **Languages:** · Fluent in speaking, reading, and writing in French & English.

REFERENCES

Research	Allan Borodin - Thesis advisor Professor - University of Toronto, Canada bor@cs.toronto.edu
	Derek Corneil - Thesis advisor Professor - University of Toronto, Canada dgc@cs.toronto.edu
	Michel Habib Professor - University of Paris - Diderot & IRIF, France habib@irif.fr
	Ekkehard Köhler Professor - Brandenburg University of Technology, Germany ekkehard.koehler@b-tu.de
Teaching	Francois Pitt Associate Professor & Undergraduate Computer Science Chair University of Toronto, Canada fpitt@cs.toronto.edu
	Karen Reid Professor - University of Toronto, Canada reid@cs.toronto.edu