

# CURRICULUM VITÆ

## PERSONAL INFORMATION

**Name:** Giovanni Viglietta  
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**Languages:** Italian (native), English (fluent), French (basic)  
**Citizenship:** Italian citizen, Canadian permanent resident  
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## CURRENT POSITION

Postdoctoral Fellow at the University of Ottawa, Canada.

## POSITIONS HELD

**2015:** Contract Instructor at Carleton University, Ottawa, Canada.  
**2013–2014:** Research Associate at Carleton University, Ottawa, Canada.  
**2012–2013:** Visiting Scholar at Carleton University, Ottawa, Canada.

## EDUCATION

**2012:** Ph.D. in Computer Science at the University of Pisa, Italy. Thesis: *Guarding and Searching Polyhedra*, supervised by Linda Pagli.  
**2008:** Master's degree in Computer Science at the University of Pisa, Italy, summa cum laude. Thesis (in Italian): *Enumerations and Patterns in Combinatorial Structures*, supervised by Francesco Romani and Pietro Majer.  
**2004:** Bachelor's degree in Computer Science at the University of Pisa, Italy, summa cum laude. Thesis (in Italian): *A New Compression Technique*, supervised by Paolo Ferragina.  
**2001–2005:** Scholarship at Scuola Normale Superiore of Pisa, Italy.

## RESEARCH INTERESTS

Distributed Computing.  
Discrete and Computational Geometry.  
Applied Computational Complexity.

## JOURNAL PAPERS

1. P. Flocchini, G. Prencipe, N. Santoro, and G. Viglietta. Distributed Computing by Mobile Robots: Uniform Circle Formation. *Distributed Computing*, to appear.
2. C. Cooper, A. Lamani, G. Viglietta, M. Yamashita, and Y. Yamauchi. Constructing Self-Stabilizing Oscillators in Population Protocols. *Information and Computation*, to appear. **Invited paper.**
3. G. A. Di Luna, P. Flocchini, S. Gan Chaudhuri, F. Poloni, N. Santoro, and G. Viglietta. Mutual Visibility by Luminous Robots Without Collisions. *Information and Computation*, vol. 254, no. 3, pp. 392–418, 2017. **Invited paper.**
4. P. Flocchini, N. Santoro, G. Viglietta, and M. Yamashita. Rendezvous with Constant Memory. *Theoretical Computer Science*, vol. 621, pp. 57–72, 2016.
5. L. Pagli, G. Prencipe, and G. Viglietta. Getting Close Without Touching: Near-Gathering for Autonomous Mobile Robots. *Distributed Computing*, vol. 28, no. 5, pp. 333–349, 2015.
6. G. Viglietta. Reprint of: Face-Guarding Polyhedra. *Computational Geometry: Theory and Applications*, vol. 48, no. 5, pp. 415–428, 2015. **Invited paper.**
7. G. Aloupis, E.D. Demaine, A. Guo, and G. Viglietta. Classic Nintendo Games Are (Computationally) Hard. *Theoretical Computer Science*, vol. 586, pp. 135–160, 2015. **Invited paper.**
8. G. Viglietta. Lemmings Is PSPACE-Complete. *Theoretical Computer Science*, vol. 586, pp. 120–134, 2015. **Invited paper.**

9. G. Viglietta. Face-Guarding Polyhedra. *Computational Geometry: Theory and Applications*, vol. 47, no. 8, pp. 833–846, 2014. **Invited paper.**
10. G. Viglietta. Gaming Is a Hard Job, but Someone Has to Do It! *Theory of Computing Systems*, vol. 54, no. 4, pp. 595–621, 2014. **Invited paper.**
11. G. Viglietta. Searching Polyhedra by Rotating Half-Planes. *International Journal of Computational Geometry & Applications*, vol. 22, no. 3, pp. 243–275, 2012.

## CONFERENCE PAPERS

1. G. A. Di Luna, P. Flocchini, L. Pagli, G. Prencipe, N. Santoro, and G. Viglietta. Gathering in Dynamic Rings. In *Proceedings of the 24th International Colloquium on Structural Information and Communication Complexity (SIROCCO)*, to appear.
2. G. A. Di Luna, P. Flocchini, T. Izumi, T. Izumi, N. Santoro, and G. Viglietta. On the Power of Weaker Pairwise Interaction: Fault-Tolerant Simulation of Population Protocols. In *Proceedings of the 37th IEEE International Conference on Distributed Computing Systems (ICDCS)*, to appear.
3. S. Das, G. A. Di Luna, P. Flocchini, N. Santoro, and G. Viglietta. Mediated Population Protocols: Leader Election and Applications. In *Proceedings of the 14th Annual Conference on Theory and Applications of Models of Computation (TAMC)*, to appear.
4. G. A. Di Luna, P. Flocchini, T. Izumi, T. Izumi, N. Santoro, and G. Viglietta. Population Protocols with Faulty Interactions: the Impact of a Leader. In *Proceedings of the 10th International Conference on Algorithms and Complexity (CIAC)*, to appear.
5. P. Flocchini, N. Santoro, G. Viglietta, and M. Yamashita. Universal Systems of Oblivious Mobile Robots. In *Proceedings of the 23rd International Colloquium on Structural Information and Communication Complexity (SIROCCO)*, pp. 242–257, 2016.
6. M. Mamino and G. Viglietta. Square Formation by Asynchronous Oblivious Robots. In *Proceedings of the 28th Canadian Conference on Computational Geometry (CCCG)*, pp. 1–6, 2016.
7. G. A. Di Luna, P. Flocchini, G. Prencipe, N. Santoro, and G. Viglietta. A Rupestrian Algorithm. In *Proceedings of the Eighth International Conference on Fun with Algorithms (FUN)*, pp. 14:1–14:20, 2016.
8. E.D. Demaine, G. Viglietta, and A. Williams. Super Mario Bros. Is Harder/Easier than We Thought. In *Proceedings of the Eighth International Conference on Fun with Algorithms (FUN)*, pp. 13:1–13:14, 2016.
9. C. Cooper, A. Lamani, G. Viglietta, M. Yamashita, and Y. Yamauchi. Constructing Self-Stabilizing Oscillators in Population Protocols. In *Proceedings of the 17th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, pp. 187–200, 2015. **Best Paper Award.**
10. P. Bose, J.-L. De Carufel, M. G. Dobbins, H. Kim, and G. Viglietta. The Shadows of a Cycle Cannot All Be Paths. In *Proceedings of the 27th Canadian Conference on Computational Geometry (CCCG)*, pp. 70–75, 2015.
11. P. Flocchini, G. Prencipe, N. Santoro, and G. Viglietta. Distributed Computing by Mobile Robots: Solving the Uniform Circle Formation Problem. In *Proceedings of the 18th International Conference on Principles of Distributed Systems (OPODIS)*, pp. 217–232, 2014.
12. G. A. Di Luna, P. Flocchini, S. Gan Chaudhuri, N. Santoro, and G. Viglietta. Robots with Lights: Overcoming Obstructed Visibility Without Colliding. In *Proceedings of the 16th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, pp. 150–164, 2014.
13. G. A. Di Luna, P. Flocchini, F. Poloni, N. Santoro, and G. Viglietta. The Mutual Visibility Problem for Oblivious Robots. In *Proceedings of the 26th Canadian Conference on Computational Geometry (CCCG)*, pp. 348–354, 2014.
14. G. Viglietta. Lemmings Is PSPACE-Complete. In *Proceedings of the Seventh International Conference on Fun with Algorithms (FUN)*, pp. 340–351, 2014.
15. G. Aloupis, E.D. Demaine, A. Guo, and G. Viglietta. Classic Nintendo Games Are (Computationally) Hard. In *Proceedings of the Seventh International Conference on Fun with Algorithms (FUN)*, pp. 40–51, 2014.

16. G. Viglietta. Rendezvous of Two Robots with Visible Bits. In *Proceedings of the 9th International Symposium on Algorithms and Experiments for Sensor Systems, Wireless Networks and Distributed Robotics (ALGOSENSORS)*, pp. 291–306, 2013.
17. G. Viglietta. Face-Guarding Polyhedra. In *Proceedings of the 25th Canadian Conference on Computational Geometry (CCCG)*, pp. 277–282, 2013.
18. G. Viglietta. Partial Searchlight Scheduling Is Strongly PSPACE-Complete. In *Proceedings of the 25th Canadian Conference on Computational Geometry (CCCG)*, pp. 55–60, 2013.
19. P. Flocchini, N. Santoro, G. Viglietta, and M. Yamashita. Rendezvous of Two Robots with Constant Memory. In *Proceedings of the 20th International Colloquium on Structural Information and Communication Complexity (SIROCCO)*, pp. 189–200, 2013.
20. Z. Abel, E.D. Demaine, M.L. Demaine, S. Eisenstat, A. Lubiw, A. Schulz, D.L. Souvaine, G. Viglietta, and A. Winslow. Algorithms for Designing Pop-Up Cards. In *Proceedings of the 30th International Symposium on Theoretical Aspects of Computer Science (STACS)*, pp. 269–280, 2013.
21. L. Pagli, G. Prencipe, and G. Viglietta. Getting Close Without Touching. In *Proceedings of the 19th International Colloquium on Structural Information and Communication Complexity (SIROCCO)*, pp. 315–326, 2012.
22. G. Viglietta. Gaming Is a Hard Job, but Someone Has to Do It! In *Proceedings of the Sixth International Conference on Fun with Algorithms (FUN)*, pp. 357–367, 2012.
23. G. Viglietta. *Hardness of Mastermind*. In Proceedings of the Sixth International Conference on Fun with Algorithms (FUN), pp. 368–378, 2012.
24. G. Viglietta. Partial Searchlight Scheduling Is Strongly PSPACE-Complete. In *Proceedings of the 28th European Workshop on Computational Geometry (EuroCG)*, pp. 101–104, 2012.
25. N.M. Benbernou, E.D. Demaine, M.L. Demaine, A. Kurdia, J. O’Rourke, G.T. Toussaint, J. Urrutia, and G. Viglietta. Edge-Guarding Orthogonal Polyhedra. In *Proceedings of the 23rd Canadian Conference on Computational Geometry (CCCG)*, pp. 461–466, 2011.
26. G. Viglietta and M. Monge. The 3-Dimensional Searchlight Scheduling Problem. In *Proceedings of the 22nd Canadian Conference on Computational Geometry (CCCG)*, pp. 9–12, 2010.

## MANUSCRIPTS

1. A. Bandettini, F. Luporini, and G. Viglietta. A Survey on Open Problems for Mobile Robots. *arXiv:1111.2259 [cs.RO]*, 2011.

## CONFERENCE TALKS

- 2017:** *Mediated Population Protocols: Leader Election and Applications*. TAMC’17, Bern, Switzerland.
- 2016:** *Square Formation by Asynchronous Oblivious Robots*. CCCG’16, Vancouver, Canada.
- 2016:** *Universal Systems of Oblivious Mobile Robots*. SIROCCO’16, Helsinki, Finland.
- 2016:** *Super Mario Bros. Is Harder/Easier than We Thought*. FUN’16, La Maddalena, Italy.
- 2016:** *A Rupestrian Algorithm*. FUN’16, La Maddalena, Italy.
- 2015:** *The Shadows of a Cycle Cannot All Be Paths*. CCCG’15, Kingston, Canada.
- 2014:** *Distributed Computing by Mobile Robots: Solving the Uniform Circle Formation Problem*. OPODIS’14, Cortina d’Ampezzo, Italy.
- 2014:** *The Mutual Visibility Problem for Oblivious Robots*. CCCG’14, Halifax, Canada.
- 2014:** *Lemmings Is PSPACE-Complete*. FUN’14, Lipari Island, Italy.
- 2014:** *Nintendo Games Are (Computationally) Hard*. FUN’14, Lipari Island, Italy.
- 2013:** *Rendezvous of Two Robots with Visible Bits*. ALGOSENSORS’13, Sophia Antipolis, France.
- 2013:** *Face-Guarding Polyhedra*. CCCG’13, Waterloo, Canada.
- 2013:** *Partial Searchlight Scheduling Is Strongly PSPACE-Complete*. CCCG’13, Waterloo, Canada.
- 2013:** *Rendezvous of Two Robots with Constant Memory*. SIROCCO’13, Ischia, Italy.
- 2012:** *Getting Close Without Touching*. SIROCCO’12, Reykjavik, Iceland.
- 2012:** *Gaming Is a Hard Job, but Someone Has to Do It!* FUN’12, Venice, Italy.
- 2012:** *Hardness of Mastermind*. FUN’12, Venice, Italy.
- 2012:** *Partial Searchlight Scheduling Is Strongly PSPACE-Complete*. EuroCG’12, Assisi, Italy.
- 2011:** *Edge-Guarding Orthogonal Polyhedra*. CCCG’11, Toronto, Canada.
- 2010:** *The 3-Dimensional Searchlight Scheduling Problem*. CCCG’10, Winnipeg, Canada.

## INVITED TALKS AND GUEST LECTURES

- 2015:** *Distributed Computing by Mobile Robots: Solving the Uniform Circle Formation Problem.* GRASTA-MAC'15 workshop, Montreal, Canada.
- 2014:** *Video Games Are Hard!* Special lecture for 7606 Computation Theory, Nagoya, Japan.
- 2011:** *Edge-Guarding Orthogonal Polyhedra.* AlgoDEEP Project, Rome, Italy.
- 2010:** *Hardness of Mastermind.* Followup to WSOFT<sub>galileo</sub> workshop, Pisa, Italy.
- 2010:** *Guarding and Searching Polyhedral Environments.* AlgoDEEP Project, Bertinoro (FC), Italy.

## SELECTED SEMINARS

- 2014:** *Theorems with Balls.* Carleton Algorithms Seminars, Ottawa, Canada.
- 2013:** *Designing Pop-Up Cards.* Carleton Algorithms Seminars, Ottawa, Canada.
- 2013:** *The Art Gallery Problem for Polyhedra.* Carleton Algorithms Seminars, Ottawa, Canada.

## TEACHING

- Fall 2015:** *Design and Analysis of Algorithms I (COMP/MATH 3804).* School of Computer Science, Carleton University, Ottawa, Canada.

## TEACHING ASSISTANCE

- Fall 2016:** *Principles of Distributed Computing (CSI 5308).* School of Electrical Engineering and Computer Science, University of Ottawa, Canada.
- Fall 2015:** *Principles of Distributed Computing (CSI 5308).* School of Electrical Engineering and Computer Science, University of Ottawa, Canada.
- Fall 2014:** *Principles of Distributed Computing (CSI 5308).* School of Electrical Engineering and Computer Science, University of Ottawa, Canada.
- Fall 2013:** *Principles of Distributed Computing (CSI 5308).* School of Electrical Engineering and Computer Science, University of Ottawa, Canada.
- Fall 2012:** *Principles of Distributed Computing (CSI 5308).* School of Electrical Engineering and Computer Science, University of Ottawa, Canada.
- Spring 2011:** *Parallel and Distributed Algorithms.* Department of Computer Science, University of Pisa, Italy.

## OTHER TEACHING AND SUPERVISING ACTIVITIES

- 2015:** Co-supervising Bailey D'Amour (Carleton University) on his Undergraduate Research Internship project.
- 2015:** Mentoring Harish Prakash (University of Ottawa) on his Master's Thesis research.
- 2002–2008:** Organizing the Italian Mathematical Olympiad, proposing problems for the national competitions, refereeing, and lecturing at several Senior Seminars held in Pisa, Italy.

## RESEARCH VISITS AND RESEARCH WORKSHOPS

- 2016:** Visiting Simon Fraser University, Vancouver, Canada, for one week.
- 2015:** Attending the 30th Bellairs Winter Workshop on Computational Geometry in Holetown, Barbados.
- 2014:** Visiting Nagoya University, Ritsumeikan University, and Osaka University, Japan, for two weeks.
- 2013:** Attending *Research Meeting on Distributed Computing by Mobile Robots*, Ischia, Italy.
- 2013:** Invited to the 28th Bellairs Winter Workshop on Computational Geometry in Holetown, Barbados (declined).
- 2013:** Visiting Kyushu University, Fukuoka, Japan, for one week.
- 2011:** Visiting MIT, Cambridge (MA), USA, for three months.
- 2011:** Visiting Scholar for three months at Smith College, Northampton (MA), USA.
- 2010:** Attending *Research Meeting and School on Distributed Computing by Mobile Robots*, Ottawa, Canada.

## PROGRAM AND ORGANIZING COMMITTEE DUTIES

- 2016:** Program Committee member for the 8th International Conference on Fun with Algorithms (FUN 2016), La Maddalena, Italy.
- 2014:** Program Committee member for the 1st Workshop on Self-Organization in Swarms of Robots: from Molecular Robots to Mobile Agents, held in conjunction with the 33rd IEEE Symposium on

Reliable Distributed Systems (SRDS 2014), Nara, Japan.

**2013:** Publicity Chair for the 9th International Symposium on Algorithms and Experiments for Sensor Systems, Wireless Networks and Distributed Robotics (ALGOSENSORS 2013), Sophia Antipolis, France.

**REFEREE OR SUBREFEREE FOR**

SIAM Journal on Discrete Mathematics.

Distributed Computing.

Information Processing Letters.

IEEE Transactions on Parallel and Distributed Systems.

Theoretical Computer Science.

Journal of Discrete Algorithms.

The Computer Journal.

ACM–SIAM Symposium on Discrete Algorithms (SODA).

IEEE Symposium on Foundations of Computer Science (FOCS).

International Symposium on Computational Geometry (SoCG).

ACM Symposium on Principles of Distributed Computing (PODC).

International Symposium on Distributed Computing (DISC).

International Colloquium on Automata, Languages, and Programming (ICALP).

International Conference on Distributed Computing and Networking (ICDCN).

Scandinavian Symposium and Workshops on Algorithm Theory (SWAT).

International Conference on Principles of Distributed Systems (OPODIS).

International Colloquium on Structural Information and Communication Complexity (SIROCCO).

Canadian Conference on Computational Geometry (CCCG).

Latin American Theoretical Informatics Symposium (LATIN).

IEEE International Parallel & Distributed Processing Symposium (IPDPS).

International Conference on Algorithms and Complexity (CIAC).

Japan Conference on Discrete and Computational Geometry and Graphs (JCDCG<sup>2</sup>).

International Conference on Combinatorial Optimization and Applications (COCOA).

Australasian Computer Science Conference (ACSC).

International Conference on Fun with Algorithms (FUN).

International Symposium on Algorithms and Experiments for Sensor Systems.

Wireless Networks and Distributed Robotics (ALGOSENSORS).

Annual International Workshop on Cellular Automata and Discrete Complex Systems (AUTOMATA).

Workshop on Self-Organization in Swarms of Robots: from Molecular Robots to Mobile Agents (WSSR).