

# Hugo A. Akitaya

Curriculum Vitae (April 19, 2021)

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CONTACT INFORMATION	Department of Computer Science University of Massachusetts Lowell Lowell, MA 01854	+1 (347) 258-0495 <a href="mailto:Hugo_Akitaya@uml.edu">Hugo_Akitaya@uml.edu</a> Citizenship: Brazil Date of birth: Oct 19th, 1988
CURRENT POSITION	Jan. 2021 – Present    Assistant Professor, University of Massachusetts Lowell. Nov. 2019 – Present    Research Affiliate, CSAIL, Massachusetts Institute of Technology.	
DEGREES	July 2018 <b>Ph.D. in Computer Science</b> , Tufts University. Thesis title: Recognizing Weak Embeddings. GPA: 4/4 March 2014 <b>M.Eng. in Computer Science</b> , University of Tsukuba. Thesis title: Generating Folding Sequences from Crease Patterns of Flat-Foldable Origami. GPA: 3.9/4 February 2011 <b>B.Eng. in Control and Automation</b> , University of Brasília. Thesis title: Development of Intuitive Algorithm to Fold Origami from Crease Patterns. GPA: 4.7/5	
RESEARCH AND TEACHING INTERESTS	Algorithms, data structures, discrete and computational geometry, computational origami, graph drawing, graph algorithms, discrete mathematics.	
TEACHING EXPERIENCE	Part-time lecturer (Tufts): Algorithms (Fall 2018), Computational origami (Spring 2019). Head TA (Tufts): Algorithms (Spring 2018). Teaching assistant (Tufts): Computational Geometry (Fall 2016 and Fall 2017), Algorithms (Spring 2014, Fall and Spring 2015), Data Structures (Fall 2014).	
RELEVANT PROFESSIONAL EXPERIENCE	Postdoctoral scholar (Carleton University Oct. 2019 – Dec. 2020): Research on computational geometry (geometric spanners and flip distance between combinatorial triangulations) with Prof. Prosenjit Bose (supported by NSERC). Postdoctoral scholar (Tufts University Aug. 2018 – Sep. 2019): Worked on reconfiguration algorithms for the NSF awards CCF-1422311, CCF-1423615, and the C-Accel Pilot award “Network Science of Census Data”. Research assistant (Tufts 2015–2018): Worked on reconfiguration algorithms for the NSF awards CCF-1422311 and CCF-1423615. Co-organized the Computational Geometry Research Group at Tufts, leading meetings and mentoring undergraduate students. Volunteer at Escola Opção (high school), Mitsukaido, Japan. (2012-2014) Worked as Physics tutor and substitute teacher.	
SCHOLARSHIPS AND AWARDS	Recipient of the Loevner Fellowship for the 2016-2017 academic year. LASPAU-administrated scholarship (Science without Borders) awarded by the Brazilian Government. (2014-2018)	

Outstanding Presentation Award at International Conference on Simulation Technology (JSST2013), Tokyo Japan.

ACM Student Research Competition, 1st Place at SIGGRAPH 2013, Anaheim CA.

MEXT scholarship awarded by the Japanese Government. (2011-2014)

Outstanding Student Award by University of Brasília. (2011)

#### LANGUAGES

Portuguese (native), English (Toefl score (2013): 107/120), Japanese (JLPT N2 score (2012): 123/180), Spanish (intermediate).

#### REFERENCES

<p>Diane L. Souvaine Computer Science Dept. Tufts University <a href="mailto:diane.souvaine@tufts.edu">diane.souvaine@tufts.edu</a> Ph.D. advisor and TA/RA supervisor</p>	<p>Erik D. Demaine Electrical Engineering &amp; Computer Science Dept. Massachusetts Institute of Technology <a href="mailto:edemaine@mit.edu">edemaine@mit.edu</a> Thesis advisor</p>
<p>Csaba D. Tóth Department of Mathematics California State University Northridge <a href="mailto:csaba.toth@csun.edu">csaba.toth@csun.edu</a> Thesis advisor</p>	<p>Prosenjit Bose School of Computer Science Carleton University <a href="mailto:jit@scs.carleton.ca">jit@scs.carleton.ca</a> Postdoc supervisor</p>

#### SELECTED PUBLICATIONS

Hugo A. Akitaya, Erik D. Demaine, Andrei Gonczi, Dylan H. Hendrickson, Adam Hesterberg, Matias Korman, Oliver Korten, Jayson Lynch, Irene Parada, and Vera Sacristán. “Characterizing Universal Reconfigurability of Modular Pivoting Robots.” *Accepted to be presented at SoCG 2021*. arXiv preprint arXiv:2012.07556 (2020).

Hugo A. Akitaya, Maike Buchin, Bernhard Kilgus, Stef Sijben, and Carola Wenk. “Distance measures for embedded graphs.” *Computational Geometry* 95 (2021): 101743. <https://doi.org/10.1016/j.comgeo.2020.101743>

Hugo A. Akitaya, Esther M. Arkin, Mirela Damian, Erik D. Demaine, Vida Dujmovic, Robin Flatland, Matias Korman, Belen Palop, Irene Parada, André van Renssen, and Vera Sacristán. “Universal Reconfiguration of Facet-Connected Modular Robots by Pivots: The O(1) Musketees.” *27th Annual European Symposium on Algorithms (ESA 2019)*. Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik, 2019. <https://doi.org/10.4230/LIPIcs.ESA.2019.3>

Hugo A. Akitaya, Matias Korman, Mikhail Rudoy, Diane Souvaine, and Csaba Tóth. “Circumscribing Polygons and Polygonizations for Disjoint Line Segments.” *In Proceedings of the 35th International Symposium on Computational Geometry (SoCG 2019)*. <https://doi.org/10.4230/LIPIcs.SoCG.2019.9>

Leonie Ryvkin, Maike Buchin, Jérôme Urhausen, and Hugo A. Akitaya. “The k-Fréchet distance revisited and extended.” *30th International Symposium on Algorithms and Computation (ISAAC 2019)*. Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik, 2019. <https://doi.org/10.4230/LIPIcs.ISAAC.2019.50>

Hugo A. Akitaya, Maarten Löffler, and Irene Parada. “How to Fit a Tree in a Box.” *In Proceedings of the 26th International Symposium on Graph Drawing and Network Visualization (GD 2018)*.

arXiv preprint <https://arxiv.org/abs/1808.10572> (2018).

Hugo A. Akitaya, Matthew D. Jones, David Stalfa, and Csaba D. Tóth. “Maximum Area Axis-Aligned Square Packings.” In *Proceedings of the 43rd International Symposium on Mathematical Foundations of Computer Science (MFCS 2018)*. Leibniz International Proceedings in Informatics (LIPIcs), vol. 117, pp. 77:1–77:15. Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik, Dagstuhl, Germany (2018). <https://doi.org/10.4230/LIPIcs.SoCG.2018.23>

Hugo A. Akitaya, Radoslav Fulek, and Csaba D. Tóth. “Recognizing Weak Embeddings of Graphs.” In *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA '18)*. <http://dl.acm.org/citation.cfm?id=3174304.3175287>

Hugo A. Akitaya, Rajasekhar Inkulu, Torrie L. Nichols, Diane L. Souvaine, Csaba D. Tóth, and Charles R. Winston. “Minimum Weight Connectivity Augmentation for Planar Straight-Line Graphs.” *Theoretical Computer Science* (2018). <http://doi.org/10.1016/j.tcs.2018.05.031>

Hugo A. Akitaya, and Csaba D. Tóth. “Reconstruction of Weakly Simple Polygons from their Edges.” *International Journal of Computational Geometry & Applications* (2018) 28:02. <https://doi.org/10.1142/S021819591860004X>

Hugo A. Akitaya, Greg Aloupis, Jeff Erickson, and Csaba D. Tóth. “Recognizing Weakly Simple Polygons.” *Discrete & Computational Geometry* (2017) 58: 785. <https://doi.org/10.1007/s00454-017-9918-3>

Hugo A. Akitaya, Erik D. Demaine, and Jason S. Ku. “Simple Folding is Really Hard.” *Journal of Information Processing*, 25 (2017): 580-589. <http://doi.org/10.2197/ipsjjip.25.580>

Hugo A. Akitaya, Erik D. Demaine, Martin L. Demaine, Adam Hesterberg, Ferran Hurtado, Jason S. Ku, and Jayson Lynch. “Pachinko.” *Computational Geometry* (2017). <https://doi.org/10.1016/j.comgeo.2017.06.011>

Hugo A. Akitaya, Erik D. Demaine, Adam Hesterberg, and Quanquan C. Liu. “Upward partitioned book embeddings.” In *Proceedings of the 25th International Symposium on Graph Drawing and Network Visualization (GD 2017)*, pp. 210-223. Springer, Cham, 2017. [https://doi.org/10.1007/978-3-319-73915-1\\_18](https://doi.org/10.1007/978-3-319-73915-1_18)

Hugo A. Akitaya, Matthew D. Jones, Gregory A. Sandoval, Diane L. Souvaine, David Stalfa, and Csaba D. Tóth. “Flattening Polygonal Linkages via Uniform Angular Motion.” *Poster presented at the 25th International Symposium on Graph Drawing and Network Visualization (GD 2017)*, pp. 615-617. Springer, Cham, 2017.

Hugo Akitaya, Cordelia Avery, Joseph Bergeron, Erik D. Demaine, Justin Kopinsky, and Jason Ku. “Infinite All-Layers Simple Foldability.” In *Abstracts from the 20th Japan Conference on Discrete and Computational Geometry, Graphs, and Games (JCDCGGG 2017)*, pp. 61–62, 2017. (accepted for publication in *Graphs and Combinatorics*) arXiv preprint <https://arxiv.org/abs/1901.08564> (2019).

Hugo A. Akitaya, Maarten Löffler, and Csaba D. Tóth. “Multi-Colored Spanning Graphs.” *Proceedings of the 24<sup>th</sup> International Symposium on Graph Drawing & Network Visualization (GD 2016)*. [https://doi.org/10.1007/978-3-319-50106-2\\_7](https://doi.org/10.1007/978-3-319-50106-2_7)

Hugo A. Akitaya, Kenneth C. Cheung, Erik D. Demaine, Takashi Horiyama, Thomas C. Hull, Jason S. Ku, Tomohiro Tachi, and Ryuhei Uehara. “Box Pleating is Hard.” In *Proceedings of the 18<sup>th</sup> Japan Conference on Discrete and Computational Geometry (JCDCG<sup>2</sup> 2015)* [https://doi.org/10.1007/978-3-319-48532-4\\_15](https://doi.org/10.1007/978-3-319-48532-4_15)