

# Nikita Letov

Ph.D. candidate  
Department of Mechanical Engineering  
McGill University

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## EDUCATION

- Ph.D. Mechanical Engineering, McGill University, Montréal QC, Canada, 2019–
- M.S. Space and Engineering Systems, Skolkovo Institute of Science and Technology, Moscow, Russia, 2016–2018  
Visiting Graduate Researcher, Systems Engineering, ISAE-SUPAERO, Toulouse, France, 2018
- B.S. Automation of Technological Processes and Production *summa cum laude*, Bauman Moscow State Technical University, Moscow, Russia, 2012–2016

## EMPLOYMENT

- 2020– Axya, Inc. (Montréal QC, Canada)  
Geometric Modeling Researcher (MITACS), R&D Department, 2020–  
Team Lead, R&D Department, 2021–
- 2019–21 McGill University (Montréal QC, Canada)  
Teaching Assistant, Department of Mechanical Engineering
- 2017–18 Skolkovo Institute of Science and Technology (Moscow, Russia) / Airbus S.A.S. (Toulouse, France)  
Researcher, Space Center, 2017–18  
External Demonstrator Feasibility Assessment Expert, Airbus S.A.S., 2018
- 2017 C3D Labs (Kolomna, Russia)  
Research Intern, Aerospace Software Developer, Department of City and Regional Planning
- 2016 Moscow Specialized Automotive Plant (Moscow, Russia)  
Process Engineer, Department of Process Engineering
- 2015 Angstrem, OJSC (Moscow, Russia)  
Research Intern in Electrical Engineering

## RESEARCH AREAS

Geometric modeling: computer-aided design, function representation, heterogeneous structures  
Data science: computer graphics, computational geometry, machine learning  
Engineering: mechanical engineering, systems engineering, physics

## PUBLICATIONS

### Journal Articles

- 2021 Liu, Y., Zheng, G., **Letov, N.**, and Zhao, Y. F. “A Survey of Modeling and Optimization Methods for Multi-Scale Heterogeneous Lattice Structures.” *Journal of Mechanical Design*, 143 (4), 040803. doi:10.1115/1.4047917
- 2021 **Letov, N.**, Velivela, P. T., Sun, S., and Zhao, Y. F. (“Challenges and Opportunities in Geometric Modeling of Complex Bio-Inspired Three-Dimensional Objects Designed for Additive Manufacturing.” *Journal of Mechanical Design*, 143 (12), 121705. doi:10.1115/1.4051720
- 2016 **Letov, N.**, Kuzmenko, E., Nenashev, A., and Gavryushin, S. “Development of Automated Dentistry Oriented Tool Storage System.” *Journal of Biomedical Radioelectronics*, 3, 87–91. radiotec.ru

### Conference Proceedings

- 2021 Velivela, P. T., **Letov, N.**, Liu, Y., and Zhao, Y. F. “Application of domain integrated design methodology for bio-inspired design-a case study of suture pin design.” *Proceedings of the Design Society*, 1, 487–496. doi:10.1017/pds.2021.49
- 2020 **Letov, N.**, and Zhao, Y. F. “Volumetric Cells: A Framework for a Bio-Inspired Geometric Modelling Method to Support Heterogeneous Lattice Structures.” *Proceedings of the Design Society*, 1, 295–304. doi:10.1017/dsd.2020.164

### Reports and Other Publications

- 2022 Yusuf Bekci, R., Mahdid, Y., Xing, J., **Letov, N.**, Zhang, Y., and Pasha, Z. “Probabilistic Models for Manufacturing Lead Times.” arXiv:2204.13792
- 2017 Tarasov, I., Murzakhanov, I., **Letov, N.**, Gabitov, I. “Energy flows in electric grids.” Skolkovo Institute of Science and Technology. academia.edu/33930130

### Manuscripts under Review

- 2022 Gao, Z., **Letov, N.**, Zhao, Y. F., Zhang, X., Wu, Y., Alex Leung, C. L., and Wang, H. “Data-driven design of biometric metamaterials with extremely recoverable and ultrahigh mechanical performance.” Under review.
- 2022 **Letov, N.**, and Zhao, Y. F. “Beam-based lattice topology transition with function representation to support additive manufacturing.” Under review.
- 2022 **Letov, N.**, and Zhao, Y. F. “A geometric modeling framework to support the design of heterogeneous lattice structures with non-linearly varying geometry.” Under review.

## INVITED TALKS

- 2018 “Solid modeling applications for complex technology roadmap systems.” C<sub>3</sub>D Labs. C<sub>3</sub>Days Conference. Moscow, Russia. May 17.

### Campus Talks

- 2017 “Adapting C<sub>3</sub>D solid modeling kernel for aerospace applications.” Skolkovo Institute of Science and Technology. Skoltech Industrial Day. Moscow, Russia. Oct 31.

## **GRANTS AND AWARDS**

### **Awards and Honors**

- 2018 Best Project Award (Barcast: sportbar finding bot), Skolkovo Institute of Science and Technology, May 29
- 2017 Best Project Award (RecyBot: Delta Robot for Battery Removal), Skolkovo Institute of Science and Technology in collaboration with Massachusetts Institute Technology, Mar 29
- 2017 Best Poster Award (Energy Flows in Electric Grid), Skolkovo Institute of Science and Technology in collaboration with Massachusetts Institute Technology, Mar 29
- 2016 Graduation with Honors, Bauman Moscow State Technological University, Jun 30

### **Grants and Fellowships**

- 2022 Data mining from computer-aided design files (\$15,000). Mitacs Accelerate Award.
- 2021 Enhancing visualization of manufacturing complexity highlights on CAD file (\$15,000). Mitacs Accelerate Award.
- 2020 Visualization of manufacturing complexity highlights on CAD file (\$15,000). Mitacs Accelerate Award.
- 2019–21 McGill Engineering Doctoral Award (\$96,000).
- 2018 Skoltech Academic Mobility Award (€4,000)
- 2016–18 Skoltech Scholarship Award for Academic Excellence (RUR1,200,000)
- 2012–16 Bauman University Scholarship Award for Academic Excellence (RUR192,000)

## **SERVICE**

### **Academic Journal Peer Review**

*Journal of Mechanical Design*

## **MEMBERSHIPS**

EuroScience

International Department of the Community of Young Scientists

Moscow Department of the Community of Young Scientists

Updated June 2022