

Nikita Letov

Ph.D. candidate
Department of Mechanical Engineering
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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

APPOINTMENTS

- 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
- 2016 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.” C₃D Labs. C₃Days Conference. Moscow, Russia. May 17.

Campus Talks

- 2017 “Adapting C₃D 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