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

EMPLOYMENT

2020– Axya, Inc. (Montréal QC, Canada)
Geometric Modeling Researcher (Mitacs), R&D Department

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, airspace, 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 modelling 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 ofmanufacturing 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

Scientific Reports

MEMBERSHIPS

EuroScience

Community of Young Scientists

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