Dmitry Popov, Ph.D.

Bioinspired Robotics Platform
Wyss Institute
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PROFILE

Robotics/Mechatronics researcher, broadly-trained in industrial and consumer applications with expertise in wearable/assistive robotics and novel types of actuators/sensors. Experienced in both, technology development (mechanical, programming, electrical, control) and technology transfer processes.

RESEARCH EXPERIENCE

2017- **Technology Development Fellow**, Bioinspired Robotics Platform
Wyss Institute & Harvard University

2015-17 **Postdoctoral Fellow**, Harvard Biodesign Lab
Harvard John A. Paulson School of Engineering and Applied Sciences

2014-15 **Postdoctoral Fellow,** Department of mechanical engineering
Korea University of Technology and Education

EDUCATION

2014 **Ph.D.** Mechanical Engineering, Korea University of Technology and Education.
2011 **B.A./ MS**. Robotics and Mechatronics, Moscow State Technical University "STANKIN".

BUSINESS EXPERIENCE

- **Co-founder of start-up** "Bio-Rob" – upper body assisting technologies
- **Patent filling experience** (Author of 15 patents)
- **Export/Import of consumer goods**
- **Start-up schools and competitions**

COLLABORATIVE WORK

- **With clinicians, therapists, and business executives** (2014 – present)
- **Projects with research centers and universities** (2011 – present)

PUBLICATIONS

Submitted Journal papers

1. **D. Popov'**, AM Kiapour', CJ Walsh, (**2017**). Soft Multi-Stiffness Bracing for Prevention of Knee Soft Tissue Injuries in Sports. *Science Translational Medicine.*

Journals papers

1. Gaponov, I., **Popov, D**., Lee, S. J., & Ryu, J.-H. (**2017**). Auxilio: A portable cable-driven exosuit for upper extremity assistance. *International Journal of Control, Automation and Systems*, *15*(1), 73–84. https://doi.org/10.1007/s12555-016-0487-7
2. Yandell, M. B., Quinlivan, B. T., **Popov, D.**, Walsh, C., & Zelik, K. E. (2017). Physical interface dynamics alter how robotic exosuits augment human movement: implications for optimizing wearable assistive devices. *Journal of Neuroengineering and Rehabilitation*, 14(1), 40.
3. **Popov, D**., Gaponov, I., & Ryu, J. H. (**2016**). Portable Exoskeleton Glove with Soft Structure for Hand Assistance in Activities of Daily Living. *IEEE/ASME Transactions on Mechatronics*, *4435*(SEPTEMBER), 1–11. https://doi.org/10.1002/elan.
4. Singh, H., **Popov, D**., Gaponov, I., & Ryu, J. H. (**2016**). Twisted string-based passively variable transmission: Concept, model, and evaluation. *Mechanism and Machine Theory*, *100*, 205–221. https://doi.org/10.1016/j.mechmachtheory.2016.02.009
5. Gaponov, I., **Popov, D**., & Ryu, J. H. (**2014**). Twisted string actuation systems: A study of the mathematical model and a comparison of twisted strings. *IEEE/ASME Transactions on Mechatronics*, *19*(4), 1331–1342. https://doi.org/10.1109/TMECH.2013.2280964
6. **Popov, D**., Lee, K., Gaponov, I., & Ryu, J. (**2013**). Twisted Strings-based Elbow Exoskeleton, *Journal of Korea Robotics Society*, *8(3)*, 164–172. http://dx.doi.org/10.7746/jkros.2013.8.3.164

Conferences papers

7. Mehmood, U., **Popov, D.**, Gaponov, I., & Ryu, J. H. (**2015**). Rotational twisted string actuator with linearized output: Mathematical model and experimental evaluation. *IEEE/ASME International Conference on Advanced Intelligent Mechatronics, AIM*, 2015–August, 1072–1077. https://doi.org/10.1109/AIM.2015.7222682
8. Singh, H., **Popov, D.**, Gaponov, I., & Ryu, J.-H. (**2015**). Passively adjustable gear based on twisted string actuator: Concept, model and evaluation. *Robotics and Automation (ICRA), 2015 IEEE International Conference on*, 238–243. https://doi.org/10.1109/ICRA.2015.7139006
9. **Popov, D**., Gaponov, I., & Ryu, J. H. (**2014**). Towards variable stiffness control of antagonistic twisted string actuators. *IEEE International Conference on Intelligent Robots and Systems*, (Iros), 2789–2794. https://doi.org/10.1109/IROS.2014.6942944
10. **Popov, D.**, Gaponov, I., & Ryu, J. H. (**2013**). A preliminary study on a twisted strings-based elbow exoskeleton. *2013 World Haptics Conference, WHC 2013*, 479–484. https://doi.org/10.1109/WHC.2013.6548455
11. **Popov, D.**, Gaponov, I., & Ryu, J. H. (**2013**). Bidirectional elbow exoskeleton based on twisted-string actuators. *IEEE International Conference on Intelligent Robots and Systems*, 5853–5858. https://doi.org/10.1109/IROS.2013.6697204
12. **Popov, D.**, Gaponov, I., & Ryu, J. H. (**2012**). A study on twisted string actuation systems: Mathematical model and its experimental evaluation. *IEEE International Conference on Intelligent Robots and Systems*, 1245–1250. https://doi.org/10.1109/IROS.2012.6385781
13. **Popov, D.**, & Choi, S.J (**2010**). Remote Educational System based on the virtual instrument server technique. *Ubiquitous Robots and Ambient Intelligence (URAI), 2010.*

AWARDS & GRANTS

Research Grants

2017 The Football Players Health Study at Harvard University $**400,000**
Soft Multi-Stiffness Bracing for Prevention of Knee Soft Tissue Injuries in Sports

2012-13 Korea Research Foundation $**445,000**
Portable technology for assistance of upper limb on daily basis.

Awards

2017 Wyss Institute $**65,000**
For outstanding talent and technical skills

2015 Korea Defense Acquisition Program Administration $**1,000**
Promising innovative technologies for soldier assistance