

# Anastasia Bolotnikova

## Curriculum Vitae

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Nationality: Estonian



## Work and Education

2024

**Researcher, French National Centre for Scientific Research (CNRS), Team Robotics and InteractionS (RIS), Laboratory for Analysis and Architecture of Systems (LAAS), Toulouse, France**

2021  
2024

**Postdoctoral Researcher, Intelligent Assistive Robotics interdisciplinary project lead, Biorobotics Laboratory and Reconfigurable Robotics Laboratory, EPFL, Lausanne, Switzerland**

2017  
2021

**Robotics Researcher, SoftBank Robotics Europe, Paris, France**

and **PhD Student in Robotics (CIFRE), University of Montpellier, Montpellier, France**

2017

**CNRS Research Engineer, IDH Team, LIRMM, Montpellier, France**

3 month research engineer practice

2016  
2017

**MSc Practice, IDH Team, LIRMM, Montpellier, France**

6 months Erasmus+ research practice in the Interactive Digital Humans (IDH) research group

2012  
2017

**BSc and MSc in Computer Science, University of Tartu, Estonia**

Graduated *cum laude*

## Professional Skills

**Programming** Python, C++, R, MatLab,  $\LaTeX$ , ROS

**Specialization** Machine Learning, Computer Vision, Image Processing, Vision-based Robot Control, Human-Robot Interaction, Assistive Robotics, Modular Robotics, Humanoid Robotics, Academic Writing

**Languages** English, French, Estonian, Russian

## Awards and Scholarships

**2019 L'Oréal-UNESCO For Women in Science Young Talents France 2019 Award**

One of 35 award recipients selected among more than 800 submitted applications

**2018 SoftBank Robotics Shanghai Innovation Prize** at 27<sup>th</sup> IEEE International Conference on Robot and Human Interactive Communication (RO-MAN 2018), Nanjing, China

**2017 Best Student Paper Award** at 13<sup>th</sup> IEEE International Conference on Automation Science and Engineering (CASE 2017), Xi'an, China

**2016 Dr. Kanako Miura Travel Support Award** to attend the 16<sup>th</sup> IEEE International Conference on Humanoid Robotics (Humanoids 2016)

**3<sup>rd</sup> place in the Master Projects Competition** of Computer Science Faculty of University of Tartu for the project work "Using the Field Edge as a Localization Landmark in the Robot Soccer"

**2015 Skype and Study IT in Estonia program scholarship**

One of eight scholarship recipients selected in the Estonian national call for scholarship applications

**2<sup>nd</sup> place in the Bachelor Projects Competition** of Computer Science Faculty (UT) for "Melioration of color calibration, goal detection and self-localization systems of NAO humanoid robots"

## Invited talks

**2020** Guest speaker presentation titled "Humanizing the digital revolution of caregiving", at the 5<sup>th</sup> joint UAE Symposium on Social Robotics (JSSR 2020) at the College of Information Technology (CIT) at United Arab Emirates University (UAEU), Al Ain, United Arab Emirates, 3-4 February 2020

[Symposium website](#)

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## List of Publications

Total: 25, Journal: 8, Conference: 13; Workshop: 3

- 2025** L. Tang, D. Rüegg, R. Zhang, **A. Bolotnikova**, J. M. Rabaey, A. Ijspeert, "Velocity Potential Field Modulation for Dense Coordination of Polytopic Swarms and Its Application to Assistive Robotic Furniture," in IEEE Robotics and Automation Letters
- Y. Yang, **A. Bolotnikova**, "Integrating Soft and Rigid Elements in the Design of Tools for Studying Human Tactile Communication for Robot Interaction Control," extended abstract in IEEE-RAS International Conference on Soft Robotics (RoboSoft), April 2025, Lausanne, Switzerland
- 2024** L. Tang\*, C. Ning\*, G. Adaimi, A. Ijspeert, A. Alahi, **A. Bolotnikova**, "Real-Time Localization for Closed-Loop Control of Assistive Furniture," RA-L submission presentation in IEEE International Conference on Robotics and Automation (ICRA), May 2024, Yokohama, Japan
- [Journal publication link](#)
- Z. O. Orhan, A. D. Prete, **A. Bolotnikova**, M. Gandolla, A. J. Ijspeert, M. Bouri, "Real-Time Locomotion Transitions Detection: Maximizing Performances with Minimal Resources," in IEEE International Conference on Robotics and Automation (ICRA), May 2024, Yokohama, Japan
- [Conference publication link](#)
- 2023** A. Morel, **A. Bolotnikova**, Y. J. Zhou, J. Rabaey, A. Ijspeert, "End-to-End Planner for Self-Reconfigurable Modular Robots Collaborative Objects Manipulation, Transport and Handover to Human Application," in IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), March 2023. Busan, Korea
- [Conference publication link](#)
- L. N. Douce\*, A. Menichelli\*, L. Huber, **A. Bolotnikova**, D. Paez-Granados, A. Ijspeert, A. Billard, "Agent Prioritization and Virtual Drag Minimization in Dynamical System Modulation For Obstacle Avoidance of Decentralized Swarms," in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), October 2023, Detroit, Michigan, USA
- [Conference publication link](#)
- L. Tang\*, C. Ning\*, G. Adaimi, A. Ijspeert, A. Alahi, **A. Bolotnikova**, "Real-Time Localization and Closed-Loop Control of Assistive Furniture," in IEEE Robotics and Automation Letters, June 2023
- [Journal publication link](#)
- 2022** K. Holdcroft, **A. Bolotnikova**, C. H. Belke, J. Paik, "Modular Robot Networking: A Novel Schema and Its Performance Assessment," in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 23-27 October 2022, Kyoto, Japan
- [Conference publication link](#)
- F. M. Conzelmann, L. Huber, D. Paez-Granados, **A. Bolotnikova**, A. Ijspeert, A. Billard, "A Dynamical System Approach to Decentralized Collision-free Autonomous Coordination of a Mobile Assistive Furniture Swarm," in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 23-27 October 2022, Kyoto, Japan
- [Conference publication link](#)
- 2021** **A. Bolotnikova**, S. Courtois, and A. Kheddar, "Adaptive Task-Space Force Control for Humanoid-to-Human Assistance," in IEEE Robotics and Automation Letters, 6(3), pp. 5705-5712, 28 May 2021
- [Journal publication link](#) | [Open access link](#)
- **A. Bolotnikova**, P. Gergondet, A. Tanguy, S. Courtois, and A. Kheddar, "Task-Space Control Interface for SoftBank Humanoid Robots and its Human-Robot Interaction Applications," in IEEE/SICE International Symposium on System Integration (SII), 11-14 January 2021, Iwaki, Fukushima, Japan
- [Conference publication link](#) | [Open access link](#) | [Project code link](#)
- 2020** **A. Bolotnikova**, "Bridging the Gap between the Open-source Task-Space Constraint-Based Control Framework and Real-World Human-Robot Interaction Applications," accepted for presentation at CobaRoP workshop at the IEEE/RSJ International Conference on Robots and Systems (IROS), 25 October – 25 November 2020, online conference

- **A. Bolotnikova**, S. Courtois, and A. Kheddar, "Autonomous Initiation of Human Physical Assistance by a Humanoid," in 29th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), 31 August – 4 September 2020, Napoli, Italy.  
[Conference publication link](#) | [Open access link](#) | [Video link](#) | [Project code link](#)
- 2019** **A. Bolotnikova**, S. Courtois, and A. Kheddar, "Multi-Contact Planning on Humans for Physical Assistance by Humanoid," in IEEE Robotics and Automation Letters, 5(1), pp. 135-142, 17 October 2019  
[Journal publication link](#) | [Open access link](#)
- **A. Bolotnikova**, S. Courtois, and A. Kheddar, "Multi-Contact Posture Computation on Humans Point Cloud," at *Meet the Women in Robotics V Workshop* (WiR V, Robotics: Science & Systems Conference), 23 June 2019, Freiburg, Germany  
[Workshop link](#)
- 2018** **A. Bolotnikova**, S. Courtois, and A. Kheddar, "Compliant Robot Motion Regulated via Proprioceptive Sensor Based Contact Observer," in IEEE-RAS 18th International Conference on Humanoid Robots (Humanoids), pp. 1–9, 6–9 November 2018, Beijing, China  
[Conference publication link](#) | [Open access link](#) | [Video link](#)
- **A. Bolotnikova**, S. Courtois, and A. Kheddar, "Contact Observer for Humanoid Robot Pepper based on Tracking Joint Position Discrepancies," in 27th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), pp. 29–34, 27–31 August 2018, Nanjing, China, **\* received Best Innovation Paper Award**  
[Conference publication link](#) | [Open access link](#) | [Video link](#)
- A. Paolillo, K. Chappellet, **A. Bolotnikova**, and A. Kheddar, "Interlinked Visual Tracking and Robotic Manipulation of Articulated Objects," IEEE Robotics and Automation Letters, vol. 3, pp. 2746–2753, 11 May 2018  
[Journal publication link](#) | [Open access link](#) | [Video link](#)
- P. Rasti, I. Lüsü, **A. Bolotnikova**, M. Daneshmand, C. Ozcinar, and G. Anbarjafari, "Optimal image compression via block-based adaptive colour reduction with minimal contour effect," Multimedia Tools and Applications, vol. 77, pp. 30939–30968, 2 June 2018  
[Journal publication link](#)
- 2017** A. Paolillo, **A. Bolotnikova**, K. Chappellet, and A. Kheddar, "Visual Estimation of Articulated Objects Configuration during Manipulation with a Humanoid," in IEEE/SICE International Symposium on System Integration (SII), pp. 330–335, 11–14 December 2017, Taipei, Taiwan  
[Conference publication link](#) | [Open access link](#) | [Video link](#)
- **A. Bolotnikova**, "Semantic Edge Detection," at *Workshop on Artificial Perception, Machine Learning and Datasets for Human-Robot Interaction* (ARMADA'17, IEEE RO-MAN), pp. 13–15, 1 September 2017, Lisbon, Portugal  
[Workshop proceedings link](#)
- M. Daneshmand, O. Bilici, **A. Bolotnikova**, and G. Anbarjafari, "Medical robots with potential applications in participatory and opportunistic remote sensing: A review," Robotics and Autonomous Systems, vol. 95, pp. 160–180, September 2017  
[Journal publication link](#)
- **A. Bolotnikova**, K. Chappellet, A. Paolillo, A. Escande, G. Anbarjafari, A. Suarez-Roos, P. Rabate, and A. Kheddar, "A circuit-breaker use-case operated by a humanoid in aircraft manufacturing," in 13th IEEE Conference on Automation Science and Engineering (CASE), pp. 15–22, 20–23 August 2017, Xi'an, China, **\* received Best Student Paper Award**  
[Conference publication link](#) | [Open access link](#) | [Video link](#)
- 2016** K. Tarvas, **A. Bolotnikova**, and G. Anbarjafari, "Edge information based object classification for NAO robots," Cogent Engineering, vol. 3, pp. 1–16, 5 December 2016  
[Journal publication link](#)

- 2015** **A. Bolotnikova**, P. Rasti, A. Traumann, I. Lüsü, M. Daneshmand, F. Noroozi, K. Samuel, S. Sarkar, and G. Anbarjafari, "Block based image compression technique using rank reduction and wavelet difference reduction," in 7th International Conference on Graphic and Image Processing (ICGIP), vol. 9817, p. 981702, 23–25 October 2015, Singapore

[Conference publication link](#)

- 2014** P. Rasti, I. Lüsü, A. Sahakyan, A. Traumann, **A. Bolotnikova**, M. Daneshmand, R. Kiefer, A. Aabloo, G. Anbarjafari, H. Demirel, and C. Ozcinar, "Modified back projection kernel based image super resolution," in 2nd International Conference on Artificial Intelligence, Modelling and Simulation (AIMS), pp. 161–165, 18–20 November 2014, Madrid, Spain

[Conference publication link](#)

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## Peer review activities

- 2025** Associate Editor for IEEE-RAS International Conference on Humanoid Robots (Humanoids)  
Associate Editor for IEEE International Conference on Robotics and Automation (ICRA)
- 2024** Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)  
Robotics: Science and Systems (RSS) Reviewer  
Advanced Intelligent Systems  
ACM Transactions on Human-Robot Interaction
- 2023** Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)  
International Journal of Robotics Research  
Transactions on Human-Robot Interaction
- 2022** Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)  
IEEE Robotics and Automation Letters  
IEEE International Conference on Robotics and Automation (ICRA 2022)
- 2020** IEEE Transactions on Systems, Man, and Cybernetics: Systems  
International Journal of Robotics Research (IJRR)  
IEEE Robotics and Automation Letters  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2020)  
IEEE International Conference on Robotics and Automation (ICRA 2020)
- 2019** IEEE International Conference on Advanced Robotics and its Social Impacts (ARSO 2019)
- 2018** IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2018)  
IEEE Robotics and Automation Letters  
IEEE International Conference on Robotics and Automation (ICRA 2018)
- 2017** IEEE Conference on Automation Science and Engineering (CASE 2017)

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## Mentions in Press

- 2020** "[Tout un Programme](#)" by Lucie Lecherbonnier in "LUM : le magazine science et société de l'UM", p. 30, March-June 2020
- 2019** "[Anastasia et Pauline, les heureuses lauréates montpelliéraines de la bourse L'Oréal-Unesco](#)" in "Midi Libre", Sciences et techniques, Hérault, Montpellier, October 2019  
"[Des robots, des hommes... et trop peu de femmes !](#)" by Sophie Viguier-Vinson in "Somme Toutes - L'Express L'Expansion", 8 October 2019  
"[Prantsusmaal roboteid arendav Eesti naisteadlane pälvis suure stipendiumi](#)" by Liisbet Saue in "DELFI - Lood", 11 November 2019
- 2017** "[Une femme aux manettes de HRP-4, un des robots les plus évolués au monde](#)" in Digital Festival Tahiti, 16 March 2017
- 2015** "[Robotitega Hiinas jalgpalli mängimas](#)" in University of Tartu (UT) magazine, nr. 8 pp. 39–41, September 2015