

KYRYLO KOLESNICHENKO

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Humanoid robot learning: motion imitation from video, reinforcement learning, sim-to-real deployment

EDUCATION

Vilnius University, Institute of Social Sciences and Applied Informatics

Kaunas, Lithuania

B.Sc. Information Systems and Cyber Security, GPA 3.8/4.0, Merit Scholarship (×5)

Sep. 2023 – Jan. 2027 (expected)

Fully funded exchanges: Kent State University, USA (ISEP, Spring 2026, GPA 3.8/4.0, *Dean's List*); University of Vermont, USA (ISEP, Fall 2025, GPA 3.8/4.0); Tampere University, Finland (Erasmus+, Spring 2025, GPA 4.67/5)

EXPERIENCE

Robotics Researcher

Mar. 2026 – Present

Advanced Telerobotics Research Lab, Kent State University, Advisor: Dr. Jong-Hoon Kim

Kent, OH, USA

- Built and open-sourced a **video-to-humanoid pipeline** that turns one monocular runway clip into a walking policy: 3D motion recovery (GVHMR), retargeting (GMR), motion-tracking RL in Isaac Lab (BeyondMimic), MuJoCo sim-to-sim validation, then the real **Booster K1**.
- The learned catwalk gait finished **20/20 consecutive 5 m hardware trials with no falls** and walks with crossover steps: step width –0.8 to 1.8 cm vs. 5.1–11.4 cm for the stock controller (**IROS 2026 LBR** [1]).
- Taught four workshops: a university-wide session at Kent State on humanoid imitation learning and sim-to-real (4 h), and three for lab members, two on robot learning and one on reinforcement learning.

Software Engineering Intern

Mar. 2025 – May 2025

SoftServe

Remote

- Developed user authentication and a recommendation module end to end, from React components to Node.js REST endpoints and PostgreSQL queries.
- Designed relational schemas and integrated REST APIs across the stack; every change went through code review and tests before merge.

PUBLICATIONS

- [1] **K. Kolesnichenko**, I. S. Cardenas, J.-H. Kim. “Learning Expressive Humanoid Locomotion from Monocular Runway Videos for Robot Fashion Shows.” *IEEE/RSJ IROS 2026*, Late Breaking Results (LBR). **Presented**. [arXiv] [code] [video]
- [2] **K. Kolesnichenko**, M. Ambraziūnas. “Can Structured Prompting Overcome Knowledge Bias in Vision-Language Models?” *Proc. 31st Int. Conf. on Information Society and University Studies (IVUS 2026)*, Kaunas, CEUR Workshop Proceedings. **Presented, to appear**. [code]
- [3] R. Ashraf, Y. Liu, **K. Kolesnichenko**, S. Ganji, J.-H. Kim, J. Y. Lee. “Can Motivational Interviewing Guided Dialogue Improve Empathy in Human–Robot Interaction? A Controlled Study with Baseline Comparison.” *Int. Conf. on Intelligent Human–Computer Interaction (IHCI) 2026*. **Accepted**.
- [4] One paper. *IEEE ICRA 2027*. **Under review**.

SELECTED PROJECTS

RFCP: Robot Fashion Catwalk Policy | NVIDIA SONIC, Unitree G1, Isaac Lab, MuJoCo, ONNX [code] [model] [data]

Aug. – Sep. 2026

- Team ATR’s entry in the **Ultimate Bots Ghost Trial 04** (Performance Arts). Fine-tuned NVIDIA’s **SONIC** whole-body-control model so a G1 walks the runway, turns, poses and walks back, mixing our catwalk clip with 30 everyday walk and turn clips so it keeps its normal gait.
- Against stock SONIC: catwalk path error 366 → 218 mm, end-mark drift 0.61 → 0.27 m, and no falls under randomized mass, friction and pushes. Released the code, ONNX policy and dataset openly.

Stylized and Teleoperable Locomotion for the Booster K1 | AMP, mjlal, PPO, MuJoCo, CAD [code]

2026 – Present

- **Catwalk with AMP**: added the arms to the adversarial motion prior’s discriminator and retuned the style reward. Elbow swing rose from 15–18% of the reference to 0.91–1.10×, and all 12 trained policies walked in simulation without a fall.
- **Legs-only teleop policy**: the policy drives the 12 leg joints while an operator moves the arms and head. Training against a random arm-motion generator (4,096 parallel envs) cut falls under full-range arm motion from 100% to under 2.5%.
- **Heel shoes**: designed and 3D-printed 50 mm heels for the K1 [CAD], modeled them in simulation and fine-tuned the walking policies, lowering the teleop policy’s fall rate in heels from 28% to 3.9%.

TECHNICAL SKILLS

Robots: Booster K1 (lab fleet of six), Unitree G1, Pepper

Robotics / RL: Isaac Lab/Sim, mjlal, MuJoCo, ROS 2, PPO/RSL-RL, AMP, BeyondMimic, NVIDIA SONIC, GVHMR, GMR, sim-to-real

ML / AI: PyTorch, Hugging Face, vLLM, ONNX Runtime, OpenCV, scikit-learn, TensorFlow, LLMs, VLMs, RAG, FAISS

Languages: Python, SQL, JavaScript/TypeScript, Bash, R, $\LaTeX$

Systems: Linux, Git, Docker, conda, CMake, CUDA, H100 GPU servers, FastAPI, PostgreSQL, React, Node.js, CAD, 3D printing