

# David Dobáš

✉ daviddobas@gmail.com   🌐 DavidDobas   ✕ DDobas   📄 daviddobas

## Summary

Robotics research engineer with a foundation in mathematical physics and complex systems, specializing in RL and imitation learning for humanoids.

Hands-on experience training RL policies via BeyondMimic, deploying and fine-tuning state-of-the-art foundation models (Sonic, BFM-Zero, OmniXtreme), custom domain randomization, motion retargeting, and real-robot deployment/debugging.

Proven in large-scale live performances and bridging sim-to-real for robust whole-body behaviors.

## Professional Experience

### Robotics Research Engineer

*SF, USA / KL, Malaysia*

*UFB*

*Jan 2026 – present*

- Deployed and fine-tuned latest humanoid foundation models (NVIDIA Sonic, BFM-Zero, OmniXtreme) on Unitree G1, adapting policies to hardware dynamics and control constraints.
- Trained PPO-based motion imitation policies using BeyondMimic in mujlab/MuJoCo from mocap/video, with custom domain randomization for robust sim-to-real transfer.
- Led deployment and real-time debugging of whole-body policies in large-scale live dance performance (8,000+ audience, 2.7M+ views), fixing instability, contact dynamics, URDF mismatches, and hardware variability via iterative optimization.
- Developed locomotion-imitation policy blending for stable coordinated behaviors.
- Built GMR-based video retargeting pipelines with stability post-processing; scaled training via Nebius cloud.
- Taught humanoid RL workshops (UC Berkeley, Nebius Build SF) on Isaac Lab, MuJoCo, retargeting, imitation, and real-robot deployment.

### Robotics AI Engineer (Freelance)

*Palo Alto, USA*

*Innate*

*Jan 2026 – Feb 2026*

- Integrated vision-language models with a ROS-based robot stack for perception-driven control.
- Built real-time perception-action loop enabling robots to interpret visual and voice inputs and act in dynamic environments.
- Worked on camera calibration and perception stack integration for reliable real-world sensing.
- Explored foundation-model-driven robot behavior and agent-based control architectures.

### Founding AI Engineer

*Paris, France*

*Gigi*

*July 2025 – Aug 2025*

- Architected the core AI infrastructure for a people-search engine, enabling natural-language retrieval across tens of thousands of profiles.
- Engineered a compositional query generation engine (Natural Language to SQL) and a custom trait-extraction pipeline.
- Designed a proprietary Network & Reputation scoring algorithm using iterative graph propagation, serving as the fundamental ranking logic for the platform.

### Quantitative Trader & Researcher

*Prague, Czech Republic*

*RSJ Securities a.s.*

*Feb 2024 – Mar 2025*

- Managed real-time execution of high-frequency trading algorithms as a Market Maker. Directly responsible for strategic parameter adjustment to maintain profitability and liquidity during volatile market conditions.

## Selected Projects

### Large-Scale Humanoid Performance Deployment [↗](#)

- Led end-to-end deployment of coordinated whole-body dance routines on 8 Unitree G1 humanoids for DJ Wukong Chinese New Year live show (8,000+ audience, 2.7M+ online views).
- Built complete pipeline: mocap + GMR retargeting with heavy post-processing (drift/symmetry/smoothing correction) → BeyondMimic + PPO training in mujlab with custom domain randomization → locomotion + imitation policy blending.
- Resolved real-world challenges including balance instability, outdated URDF mismatches, open-loop control constraints, hardware variability, and minimal rehearsal time through rapid calibration and debugging.

### Humanoid Motion Learning from Video

- Built pipeline for extracting motion from video → retargeting → RL training in simulation.
- Enabled scalable generation of training data without motion capture.

### Humanoid Training Workshops ([UC Berkeley](#) [↗](#), [Nebius Build SF](#) [↗](#))

- Led workshops on humanoid RL pipelines (Isaac Lab, MuJoCo, mujlab).
- Taught motion retargeting, imitation learning, and sim-to-real deployment strategies.
- Supported teams deploying policies in simulation and on real robots.

## Research and Publications

### Generalized Ensemble Model for Complex Networks via Tsallis Entropy [↗](#)

*Sept 2024 – present*

- Pioneered the first ensemble model for complex networks utilizing non-extensive Tsallis statistics, identifying novel phase transitions and degree correlations absent in classical Shannonian approaches.
- Mathematically formalized the generalization of Erdős-Rényi and Park-Newman models to characterize reconstruction limits in density-sparse regions.
- Paper currently in preparation for submission to Physical Review X (PRX). Preliminary peer review noted the work ‘adds significant value to the state of the art in the field’

### Scale-Invariant Network Reconstruction Model [↗](#)

*Sept 2023 – Sept 2024*

- Conducted research at Leiden University (Econophysics & Network Theory Group) applying scale-invariant models to reconstruct interbank loan networks, improving systemic risk estimation methods.

## Education

### Czech Technical University in Prague

*Prague, Czech Republic*

*MSc (Graduated with Honors) in Mathematical Physics*

*Sept 2022 – June 2025*

- GPA: 3.94/4.0
- Thesis: *Complex networks modelling using non-Shannonian entropies* (Basis for PRE submission).

### prg.ai

*Prague, Czech Republic*

*Selective Minor in Machine Learning & AI*

*May 2021 – present*

- Selected for elite inter-university AI program (GPA: 4.0/4.0).
- Deep Reinforcement Learning course: full AlphaZero reimplemention from scratch in PyTorch.

### Leiden University

*Leiden, Netherlands*

*Visiting Graduate Researcher in Physics*

*Sept 2023 – Jan 2024*

- Research Focus: Complex network reconstruction under Prof. Diego Garlaschelli.

### KAIST

*Daejeon, South Korea*

*Visiting Graduate Researcher in Physics*

*Feb 2023 – June 2023*

- Research Focus: Statistical Physics of Complex Systems under Prof. Hawoong Jeong.

### Czech Technical University in Prague

*Prague, Czech Republic*

*BSc (Graduated with Honors) in Mathematical Engineering*

*Sept 2019 – June 2023*

- GPA: 3.97/4.0

## Technical Skills

**ML Frameworks & Tools:** PyTorch (AlphaZero reimplementation, transformers, CNNs etc.), MuJoCo/mjlab, Isaac Lab, ROS, Nebius Cloud, Git, Python (Advanced)

**Robotics & AI:** Deep RL (PPO), Imitation Learning, Humanoid Foundation Models (Sonic, BFM-Zero, OmniXtreme), Domain Randomization, Sim-to-Real, Motion Retargeting, Whole-Body Control

**Core Math & Physics:** Stochastic Differential Equations, Linear Algebra, Probability & Statistics, Nonequilibrium Statistical Physics

## Languages

**Czech:** Native

**English:** C1 (Cambridge Advanced)

**Korean:** A2