Nikita Cherniadev

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Experience

- **Dyson** Aug 2023 – Present
  Senior Simulation Engineer *MuJoCo, Unity, VR, Python, C#*
  - **Overview**: Led development of simulation platforms for robot learning at the Dyson Robot Learning Lab (DRLL) managed by Stephen James, collaborating with research scientists, Xiao Ma, Mohit Shridhar, Younggyo Seo. DRLL was an industry research lab, focused on advancing general-purpose robot intelligence through efficient reinforcement and imitation learning algorithms, utilizing human demonstrations and autonomous exploration.
  - **BiGym**: Led the development of BiGym, a benchmark and learning environment for mobile bi-manual robotic manipulation based on MuJoCo. It includes 40 diverse tasks set in home environments, supports 6 control modes, state, RGB, and depth observations, and incorporates 3 robot models. Designed for demo-driven learning methods, BiGym features a VR module for collecting human demonstrations. The project's code and dataset, which contain over 3.000 human demonstrations, are openly available on GitHub.
  - **MuJoCo Simulation**: Developed two MuJoCo-based simulation solutions for internal DRLL projects, focusing on sim-to-real learning for mobile robots and manipulation tasks.
  - **Unity Simulation**: Led the development of a general gym environment for robot learning based on the Unity Game Engine.
  - **Robot Learning**: Contributed to development of the general robot learning package, RoboBase implementing the DRM reinforcement learning algorithm.
- **Sber** Oct 2021 – July 2023
  Senior Unity Developer *Unity, Zenject, gRPC, Jenkins, VR, C#*
  - **Overview**: Senior Software Developer at Sberbank, leading the development of the VR training simulator for cash-in-transit (CIT) security personnel. Based on the Unity Game Engine for HTC Vive Pro headset with custom VR controllers. Deployed the system across 11 regional bank departments, achieving over 8.000 active users.
  - **Training Scenarios**: Developed 15 training scenarios for CIT security guards to test and improve core skills: risk assessment, concentration, and shooting.
  - **Custom Scenarios**: Developed a system that enables instructors to create custom training scenarios on-demand using an in-game editor.
  - **NPC Behaviour**: Developed a modular system for designing behaviors for NPCs based on Finite State Machines (FSM), incorporating motion matching and Inverse Kinematics (IK) animations.
  - **Analytics**: Integrated the simulator with the bank's authorization and analytics system using gRPC.
  - **CI/CD**: Implemented Jenkins CI/CD pipelines on the bank's intranet in collaboration with the DevOps team.
- **Native Robotics** Jan 2019 – Sept 2021
  Co-founder, Lead Unity Developer *Unity, JSON-RPC, AR, VR, Python, C#*
  - **Overview**: Co-founded and led technical development at Native Robotics, a start-up specializing in online programming and control solutions for industrial robots.
  - **Architecture**: Led the development of the software architecture for the Omni Kit: a robot-agnostic simulation & control framework based on the Unity Game Engine and Python. The Omni Kit is a core component of two main products at Native Robotics, enabling FSM-based control of industrial robotic systems. The framework supports simulation of robot programs and real-time execution on physical robots.
  - **Omni Pack**: Led the development of a real-time control application for industrial palletizing robots. The application enables visual re-programming of palletizing systems and supports multiple robot brands including Universal Robots, KUKA, Kawasaki, and others. Optimized the application for execution on Intel NUCs running a custom Linux-based operating system.
  - **Omni Fit**: Led the development of an AR application, Omni Fit, for realistic and interactive showcases of robot systems. Built to support iOS and WebGL platforms, Omni Fit was utilized by our distributors to enhance sales presentations of their solutions in conjunction with Omni Pack.
  - **CI/CD**: Implemented CI automation using GitHub Actions.
  - **Leadership Skills**: Managed a team of 7 developers using the Agile framework.
  - **Business Development**: Attracted EU distributors, securing over 15 new partners.

- **VR Quest** June 2016 – Feb 2018
  Lead Unity Developer *Unity, UNET, VR, C#*
  - **Overview**: Led technical development at VR Quest, a start-up focused on building commercial VR experiences. Developed several 60-minute-long multiplayer experiences within strict 6-8 month deadlines per game. The most popular escape rooms, "Ice Valkyrie" and "Minority Report", were available in over 20 locations in Germany and Russia. These experiences were built using the Unity Game Engine for Oculus VR headsets (DK2, Rift CV1) and Leap Motion controllers.
  - **Multiplayer**: Implemented local multiplayer for 2-4 players using UNET networking. Developed screen-streaming functionality for the escape room administrator.
  - **Analytics**: Developed an authorization and analytics system integrated with Google Docs.
  - **Leadership Skills**: Managed a team of 5 developers using the Agile framework.
  - **Business Development**: Represented the company at conferences in Russia, Germany, and Poland. Provided technical support to clients in the EU.

Education

- **Skolkovo Institute of Science and Technology** Sept 2018 – June 2020
  Master of Science in Information Systems and Technologies *GPA: 4.00 (5.0/5.0)*
  - **Thesis**: Development of the Framework for Simulation and Real-Time Control of Adaptive Robot Cells.
  - **Achievements**: Honors List, Best Entrepreneurship Spirit Award, Academic Excellence Award.

  Projects:
  - **MirrorShape**: High Fidelity Large-Scale Shape Rendering Framework for Virtual Reality
  - **RVR**: Remote Programming of Industrial Robots
- **Bauman Moscow State Technical University** Sept 2014 – June 2018
  Bachelor of Science in Robotics and Mechatronics *GPA: 3.707 (4.8/5.0)*
  - **Thesis**: Mixed Reality Remote Control System for Industrial Robots.
  - **Achievements**: Honors List.

Publications & Awards

- **BiGym: A Demo-Driven Mobile Bi-Manual Manipulation Benchmark** 2024
  Nikita Cherniadev, Nicholas Backshall, Xiao Ma, Yunfan Lu, Younggyo Seo, and Stephen James.
- **MirrorShape: High Fidelity Large-Scale Shape Rendering for Virtual Reality** 2019
  Aleksey Fedoseev, Nikita Cherniadev, and Dzmitry Tsetserukou.
- **Startup Village Competition** 2020
  2nd place with Native Robotics startup, winning a $30.000 prize.
- **Microsoft Imagine Cup Hackathons** 2017, 2015
  1-st place for robotics and gaming projects.
- **Intel ISEF Los Angeles, CA** 2014
  Finalist, recognized with special awards: AIPLA First Prize, CAST First Prize.

Skills

- **Programming Languages**: Python, C#, C/C++
- **Tools and Frameworks**: Unity, .NET, MuJoCo, Git, Docker
- **Applications**: Blender, Autodesk 3ds Max, Autodesk Inventor, Matlab Simulink