Nick Popelnukh

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Machine Learning Engineer | Real-Time Computer Vision | Toronto, ON | Canadian Citizen

Machine Learning Engineer with 3+ years shipping real-time perception models to 3,000+ interactive projection systems. Extended ROMP with a depth-fusion branch for ~70 FPS 3D pose tracking and built depth-fused hand tracking that works in low light. Also built LLM-powered automation in production. Strong in PyTorch, CUDA, C++, and Python.

EXPERIENCE

Machine Learning Engineer - Kids Jump Tech **Nov 2023 – Oct 2026**

Miami, FL (Hybrid)

- Shipped real-time 3D body tracking at ~70 FPS to 3,000+ hardware units (RTX 5050 Low Profile) by extending ROMP (PyTorch) with a depth branch that fuses RealSense depth and RGB features, trained with AWS SageMaker GPU jobs.
- Replaced a deprecated third-party calibration tool with in-house software for sensor extrinsics alignment, floor-plane alignment, and display/projection mapping, saving ~$600K/year in licensing and used in customer setup.
- Cut low-light 3D pose error ~29% vs. an RGB-only baseline (MPJPE) by fine-tuning with SMPL fitting on ~40K self-generated, synthetically darkened RGB-D frames.
- Built a hand-tracking student model (distilled from RTMPose) that fuses depth with darkened RGB, cutting root-relative joint error ~33% vs. an RGB-only model in low light (10 vs. 15 mm) at ~30 ms.
- Sped up inference 2–5x with no visible accuracy regression in visual QA by exporting models to ONNX/TensorRT with FP16 quantization, deployed to SageMaker endpoints or on-device GPUs.
- Cut sensor-pipeline latency ~79% (140 ms to ~30 ms) by profiling and optimizing C#, C++, and Python code.
- Built the Unity pipeline that converts LiDAR wall and floor touches into touch events.
- Built the company’s first live human-to-character motion capture, retargeting tracked poses onto any T-pose rig (20+ rigs) in Unity.

Founding Lead Engineer - Classeasily (Part-time) **Jan 2025 – Aug 2026**

Toronto, ON (Remote)

- Built LLM-powered automation, including a RAG pipeline, that keeps marketplace listings current and analyzes customer reviews, running in production.
- Built the full platform with a team of 6, reaching 20,000+ people: booking, Stripe payments (Apple/Google Pay), authentication, and an admin scheduling dashboard (Next.js, Node.js, TypeScript, PostgreSQL).
- Eliminated double-booking under concurrent requests with PostgreSQL row-level locking, validated by concurrent-request tests, sustaining 99.9% uptime for auth, booking, and payments.
- Cut search latency 92–94% (~5 s to ~0.3–0.4 s) by replacing SQL joins with OpenSearch, and sped up other endpoints with query profiling, indexes, and caching.

Software Engineer - Confident Care of Florida (Part-time) **Aug 2025 – Oct 2026**

Jacksonville, FL (Hybrid)

- Saved ~10 hours per week of manual follow-up with an event-driven AWS Lambda pipeline (~300 events/day) that automated applicant status updates and runs unattended in production.
- As sole engineer, rebuilt the company website (Next.js, React, TypeScript on Vercel and AWS Lambda), including a multi-step careers application pipeline and a searchable insurance document system.

EDUCATION

M.S. in Computer Science **Admitted | Graduating Dec 2028**

Georgia Institute of Technology, Atlanta, GA

B.S. in Computer Science **Jul 2020 – Oct 2023**

Western Governors University, Salt Lake City, UT

SKILLS

Languages: Python, C++, C#, SQL, TypeScript
ML & Real-Time: PyTorch, TensorFlow/Keras, scikit-learn, NumPy, pandas, Computer Vision, 3D Pose Estimation (ROMP, SMPL), Hand Tracking (RTMPose), LiDAR, YOLO, MediaPipe, Detectron, RGB-D / Depth Sensing (Intel RealSense), OpenCV, CUDA, ONNX, TensorRT, FP16 Quantization
Deployment & MLOps: Model Deployment, AWS SageMaker, NVIDIA Jetson, MLflow, Weights & Biases, Unity data pipelines
LLMs: Hugging Face Transformers, LoRA fine-tuning, RAG / vector databases, OpenAI / Anthropic APIs
Backend & Cloud: Node.js, REST APIs, PostgreSQL, OpenSearch, AWS (SageMaker, Lambda, EKS, S3), Terraform, Docker, Kubernetes, GitHub Actions
Frontend & Tools: React (Next.js), Git