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Carlo Velarde

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Education

Princeton University, PhD in Computer Science – Princeton, NJ — Sept 2018 – May 2023

- Thesis: Efficient Neural Architecture Search for Resource-Constrained Deployment
- Advisor: Prof. Sanjeev Arora
- NSF Graduate Research Fellowship, Siebel Scholar (Class of 2022)

Boğaziçi University, BS in Computer Engineering – Istanbul, Türkiye — Sept 2014 – June 2018

- GPA: 3.97/4.00, Valedictorian
- Fulbright Scholarship recipient for graduate studies

Experience

Co-Founder & CTO, Nexus AI – San Francisco, CA — June 2023 – present

- Built foundation model infrastructure serving 2M+ monthly API requests with 99.97% uptime
- Raised $18M Series A led by Sequoia Capital, with participation from a16z and Founders Fund
- Scaled engineering team from 3 to 28 across ML research, platform, and applied AI divisions
- Developed proprietary inference optimization reducing latency by 73% compared to baseline

Research Intern, NVIDIA Research – Santa Clara, CA — May 2022 – Aug 2022

- Designed sparse attention mechanism reducing transformer memory footprint by 4.2x
- Co-authored paper accepted at NeurIPS 2022 (spotlight presentation, top 5% of submissions)

Research Intern, Google DeepMind – London, UK — May 2021 – Aug 2021

- Developed reinforcement learning algorithms for multi-agent coordination
- Published research at top-tier venues with significant academic impact
  - ICML 2022 main conference paper, cited 340+ times within two years
  - NeurIPS 2022 workshop paper on emergent communication protocols
  - Invited journal extension in JMLR (2023)

Research Intern, Apple ML Research – Cupertino, CA — May 2020 – Aug 2020

- Created on-device neural network compression pipeline deployed across 50M+ devices
- Filed 2 patents on efficient model quantization techniques for edge inference

Research Intern, Microsoft Research – Redmond, WA — May 2019 – Aug 2019

- Implemented novel self-supervised learning framework for low-resource language modeling
- Research integrated into Azure Cognitive Services, reducing training data requirements by 60%

Projects

FlashInfer Jan 2023 – present

Open-source library for high-performance LLM inference kernels

- Achieved 2.8x speedup over baseline attention implementations on A100 GPUs
- Adopted by 3 major AI labs, 8,500+ GitHub stars, 200+ contributors

NeuralPrune Jan 2021

Automated neural network pruning toolkit with differentiable masks

- Reduced model size by 90% with less than 1% accuracy degradation on ImageNet
- Featured in PyTorch ecosystem tools, 4,200+ GitHub stars

Publications

Sparse Mixture-of-Experts at Scale: Efficient Routing for Trillion-Parameter Models July 2023
John Doe, Sarah Williams, David Park
10.1234/neurips.2023.1234 (NeurIPS 2023)

Neural Architecture Search via Differentiable Pruning Dec 2022
James Liu, *John Doe*
10.1234/neurips.2022.5678 (NeurIPS 2022, Spotlight)

Multi-Agent Reinforcement Learning with Emergent Communication July 2022
Maria Garcia, *John Doe*, Tom Anderson
10.1234/icml.2022.9012 (ICML 2022)

On-Device Model Compression via Learned Quantization May 2021
John Doe, Kevin Wu
10.1234/iclr.2021.3456 (ICLR 2021, Best Paper Award)

Selected Honors

- MIT Technology Review 35 Under 35 Innovators (2024)
- Forbes 30 Under 30 in Enterprise Technology (2024)
- ACM Doctoral Dissertation Award Honorable Mention (2023)
- Google PhD Fellowship in Machine Learning (2020 – 2023)
- Fulbright Scholarship for Graduate Studies (2018)

Skills

Languages: Python, C++, CUDA, Rust, Julia

ML Frameworks: PyTorch, JAX, TensorFlow, Triton, ONNX

Infrastructure: Kubernetes, Ray, distributed training, AWS, GCP

Research Areas: Neural architecture search, model compression, efficient inference, multi-agent RL

Patents

1. Adaptive Quantization for Neural Network Inference on Edge Devices (US Patent 11,234,567)
2. Dynamic Sparsity Patterns for Efficient Transformer Attention (US Patent 11,345,678)
3. Hardware-Aware Neural Architecture Search Method (US Patent 11,456,789)

Invited Talks

4. Scaling Laws for Efficient Inference — Stanford HAI Symposium (2024)
3. Building AI Infrastructure for the Next Decade — TechCrunch Disrupt (2024)
2. From Research to Production: Lessons in ML Systems — NeurIPS Workshop (2023)
1. Efficient Deep Learning: A Practitioner's Perspective — Google Tech Talk (2022)

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