


# CAMILO PESTANA

HEAD OF AI/ML & DATA SCIENCE

 capcarde@gmail.com

 +61404281960

 [elcronos](#)

 [camilopestana](#)

 Perth, Western Australia

## EDUCATION

### PhD in Computer Science (AI)

University of Western Australia ·  
Perth, Australia  
2019 - 2022

Thesis: "[Leveraging Computer Vision Through Non-traditional Adversarial ML](#)".

ACS Medal Finalist. Top 10 PhD Thesis (WA). Explored adversarial vulnerabilities in deep learning for computer vision and advanced the field with novel attack strategies, improved benchmarking fairness, explainability methods, and 3D texture generation techniques.

### Hons. Computer Science, First Class, High Distinction

Edith Cowan University  
2017

Dean's List. Top 5% Science School. Thesis: "Influenza like illness (ILI) modelling by analysing of geotagged twitter data". Developed a model that predicted influenza infection counts across Australian regions with up to 83% precision from social media events.

### BSc Software & Systems Engineering

Catholic University of Colombia  
2007-2013

Thesis: Designed and analysed SGIPVIS, a web information system that links environmental, social, and economic criteria (temperature, humidity, density, material costs) to improve social housing prototypes in Bogotá. Built with XP agile methodology as part of an interdisciplinary architecture + software engineering research project. [\[Link\]](#)

## SUMMARY

AI/ML leader and hands-on practitioner. 15 years in tech, 10 productionising ML, GenAI and agentic systems across Defense, Finance, MedTech, Oil & Gas and Gaming. Pivoted from software engineering into ML, Computer Vision and Adversarial AI Security in 2017. DARPA-backed adversarial ML research. PhD in AI (UWA, 2022). Led teams delivering \$500M+ USD ROI. Australian Global Talent Visa recipient.

Trusted C-suite and Board advisor on AI strategy, modernisation, and risk. Head of the central AI/ML & Data Science function (~20 people) inside a 1,500-employee, \$4.15B USD revenue gaming company. Track record across regulated and high-stakes domains: FDA 510(k)-cleared clinical AI, DARPA-backed adversarial ML, and production fraud detection generating \$230M+ USD ROI.

## PROFESSIONAL EXPERIENCE

### HEAD OF DATA SCIENCE & ML

Oct 2025 - Present

Virtual Gaming Worlds (VGW), Revenue 2024: \$4.15B USD | Perth, Australia

Promoted to unify AI/ML Engineering and Data Science into one enterprise function. Own strategy, governance, and delivery across all AI/ML investment for the company.

- Owning end-to-end enterprise modernisation from legacy Databricks to AWS (SageMaker, Bedrock, S3 Tables, MSK) with Apache Iceberg as the open table format - cutting platform cost while improving deployment speed and reliability
- Productionised agentic AI use cases on AWS Bedrock with Guardrails and LangGraph orchestration, moving GenAI from prototype to governed enterprise operations
- Led data platform re-architecture to Apache Iceberg on AWS S3 Tables with MSK streaming, enabling scalable real-time integration across business systems
- Built and shipped a production fraud detection model for the United Slots launch in 4 weeks, removing initial fraud exposure and protecting revenue from day one
- Defined AI governance standards and converged delivery practices across squads to lift consistency, risk control, and execution quality
- AI security SME for the central security function: threat modelling, red-teaming, and defence for agentic and ML systems

### DATA SCIENCE MANAGER

May 2024 - Oct 2025

Virtual Gaming Worlds (VGW) | Perth, Australia

Led a 13-person Data Science & Analytics team with direct P&L impact. Promoted to Head of Data Science within 18 months.

- Built and shipped fraud detection combining Agentic AI, LLMs, and Computer Vision on AWS, generating \$230M+ USD ROI in year one
- Personally architected core systems: model architecture, LLM orchestration layer, and CV pipeline - hands-on technical leadership, not pure management
- Developed KYC red-teaming frameworks against deepfakes, synthetic identities, and adversarial inputs, drawing directly on PhD-era adversarial ML research
- Automated AMOE and compliance workflows, significantly cutting processing times and reducing manual review burden
- Partnered with CTO to shape the AI/ML roadmap and guide strategic risk decisions at board level

## PORTFOLIO & PROJECTS

### AI Security (Open Source)

Open source course for AI Security, ML/LLM vulnerabilities, prompt injection, adversarial ML defences, and more.

[github.com/elcronos/AISecurity](https://github.com/elcronos/AISecurity)

### AI Course Website

Open-source self-guided course teaching the essential concepts of AI: fundamentals, ML, deep learning, and modern GenAI workflows.

[elcronos.github.io/ai-course-website](https://elcronos.github.io/ai-course-website)

### Tarsa (Agent Observability)

Observability layer for Claude agents: tracing, run inspection, and eval telemetry across multi-agent workflows.

[elcronos.github.io/tarsa/](https://elcronos.github.io/tarsa/)

### Agentic & GenAI Projects

Three multiplayer games shipped with spec-driven development, Ralph Loops, and subagents. Images and SFX are fully AI-generated. Alien Waves (Brotato-inspired arena co-op), Inkwell Dice (Balatro-inspired multiplayer deckbuilder), Slot Crawler (Slay the Spire-inspired roguelike).

[github.com/elcronos/agentic](https://github.com/elcronos/agentic) · [capcarde.itch.io/alien-waves](https://capcarde.itch.io/alien-waves) · [capcarde.itch.io/inkwell-dice](https://capcarde.itch.io/inkwell-dice) · [capcarde.itch.io/slot-crawler](https://capcarde.itch.io/slot-crawler)

### Full-Stack Clone Projects

Production-grade clones of popular web apps built to explore real-time collaboration, scalable architecture, and modern full-stack patterns. Miro Clone (collaborative whiteboard with live cursors and shapes) and Facebook Clone (social feed, auth, and posts).

[github.com/elcronos/miro-clone](https://github.com/elcronos/miro-clone) · [github.com/elcronos/facebook-clone](https://github.com/elcronos/facebook-clone)

### Data Science & ML Course in Oil & Gas

Contributor to the first open-source DS and ML Course in the Oil & Gas industry.

[github.com/3springs/deep\\_ml\\_curriculum](https://github.com/3springs/deep_ml_curriculum)

## CORE SKILLS

### Agentic & GenAI

AWS Bedrock · Bedrock Guardrails · LangGraph · LangChain · DSPy · RAG · LLM Fine-tuning & Evaluation · Agentic Orchestration · Diffusion Models

### Machine Learning

PyTorch · TensorFlow · LightGBM · Scikit-learn · Active/Semi-supervised Learning

## SENIOR DATA SCIENTIST

Nov 2022 - April 2024

Artrya, MedTech, AI for Coronary Artery Disease | Perth, Australia

Led ML model development and MLOps for clinical AI products. Two of the models developed received FDA 510(k) clearance for commercial use.

- FDA-Cleared Models: contributed to two AI models approved for FDA commercialisation (stenosis estimation and plaque classification) through rigorous clinical validation and regulatory submission work
- 3D CNN Cardiac Imaging: designed and trained attention mechanism architectures (PyTorch/Tensorflow) for coronary CT analysis, significantly outperformed previous baselines
- Data-Efficient Learning: active and semi-supervised learning to reduce dependency on costly clinical annotations while maintaining diagnostic accuracy
- Clinical MLOps: AWS SageMaker lifecycle management, MLflow for regulatory-grade experiment tracking and reproducibility
- Clinical Tooling: Streamlit annotation platform for clinical teams, supporting FDA/TGA regulatory submissions
- Supervised Master's student (University of Twente, Netherlands) on GAN-based radiomic feature harmonisation across CT scanner vendors

## HEAD OF DATA AND SOFTWARE

May 2021 - Nov 2022

VitalTrace, MedTech Startup, Continuous Lactate Monitoring | Perth, Australia

Joined as Senior Data Scientist (Tech Lead) and promoted to Head of Data and Software within 9 months. Built the entire data, software, and ML capability from zero. Led 7 direct reports. Concurrent with part-time research at UWA (Feb-Nov 2022).

- Built company's first data platform from scratch: data lake, data warehouse, and all AWS pipelines (Airflow, Lambda, Aurora/PostgreSQL)
- \$65K saved in first 4 months by replacing external consulting and third-party software with in-house solutions
- ~80 hours/week saved via a cloud-native electrochemical analysis application, eliminating reliance on external vendors
- Biosensor ML: deep learning and statistical models for continuous lactate monitoring, accelerated R&D insights by 50% fortnightly
- Introduced Agile methodologies, achieved consistent on-time milestone delivery across the multidisciplinary team

## LECTURER & RESEARCHER (AI/Computer Vision) Feb 2019 - Nov 2022

The University of Western Australia (UWA) | Perth, Australia

Dual role: Cloud Computing Lecturer (2019-2021) and DARPA-funded adversarial ML researcher. Concurrent industry engagements: Chevron ML contract (Jul 2020-Mar 2021) and VitalTrace from May 2021.

- DARPA Research: US DoD-funded program on adversarial machine learning, contributing novel attack and defence strategies for computer vision systems
- Chevron ML contract (Oil & Gas, Jul 2020 - Mar 2021): industry ML engagement; contributor to the first open-source DS/ML curriculum for the Oil & Gas industry
- Published in IEEE CVPR, WACV, and 3DV (top-tier venues in computer vision)
- Lectured Cloud Computing (AWS) units to undergraduate and postgraduate cohorts

## CO-FOUNDER & CHIEF DATA SCIENTIST

Oct 2017 - Jun 2019

SmartVision AI | Perth, Australia

Co-founded a Computer Vision and ML startup building real-time hazard detection systems for road infrastructure. Led all AI development and product direction from inception.

- Designed and trained deep CNN architectures for real-time roadside hazard detection from video footage, in partnership with Mainroads Western Australia
- Won 1st place at the WA Ministry of Data Hackathon (40+ teams) and secured a \$21K SPURonWA government innovation grant within five months of founding
- Led AI development across the full stack: data collection, model training, deployment, and product integration

**Computer Vision**

CNNs · 3D CNNs · VLMs · Object Detection / OCR · Segmentation · Medical Imaging

**MLOps & Data**

SageMaker · MLflow · W&B · Airflow · Docker · Snowflake · Spark · Apache Iceberg · Kafka MSK · Databricks

**Data Science**

Statistical Inference · Bayesian Methods

**CERTIFICATIONS****AI Red Teamer Path**

Hack The Box Academy · 2026

**Global Cyber Skills CTF**

Operation Blackout · HTB · 2025

**Agentic AI (7 courses)**

DeepLearning.AI · 2025  
Eval & Govern AI Agents, DSPy, AutoGen, LangGraph, LangChain for LLM Apps

**RSNA Medical Imaging AI**

Advanced Certificate · Aug 2023

**RSNA Medical Imaging AI**

Foundational Certificate · Apr 2023

**ML in Production**

DeepLearning.AI · Jul 2022

**AI for Medical Diagnosis**

DeepLearning.AI · Apr 2020

**Build Basic GANs**

DeepLearning.AI

**VOLUNTEER****Organizer, Perth ML Group**

Perth Machine Learning Group · Feb 2019 - Present (6+ yrs)

Talks on AI/ML trends & innovation

**Content Creator & Alpha Tester**

DeepLearning.AI · 2019-2020

**Advisor & Member**

Data Science Club at UWA · 2020-2021

**UniMentor**

University of Western Australia · 2019-2020

**SOFTWARE DEVELOPER & ML ENGINEER**

Apr 2018 - Jun 2019

HIVO, Digital Asset Management SaaS | Perth, Australia

Joined HIVO to build ML and computer vision features into their cloud-based Digital Asset Management platform, serving enterprise clients across government, sport, media, and resources. Role ran concurrently with SmartVision AI.

- Built facial recognition, advanced image search, and ML-powered asset analytics using PyTorch, Keras, AWS Rekognition, and SageMaker
- Developed a scalable asset management pipeline integrating image classification, tagging automation, and similarity search across large media libraries
- Directly contributed to winning three major enterprise accounts: Woodside Energy, Telethon Kids Institute, and Fremantle Docks

**SOFTWARE ENGINEER**

2014 - 2017

Globant, Enterprise consulting across three countries | Colombia, USA, Australia

Joined Globant as a software consultant, delivering production features across enterprise clients in Colombia, the United States, and Australia. Stack:

JavaScript/TypeScript, ReactJS, NodeJS, PostgreSQL, Oracle, Docker, CI/CD.

- Southwest Airlines (via Globant): migrated a legacy airline platform to a microservices architecture using the Netflix OSS stack (Eureka, Zuul, Ribbon), deployed across Texas and San Francisco data centres
- National Geographic, Disney, ESPN, Royal Caribbean (via Globant): Java backend engineering on high-traffic consumer platforms serving millions of users globally
- Bank of Bogotá: designed and implemented features for the Customer Indebtedness System including SOAP/REST API endpoints and Oracle/PostgreSQL stored procedures supporting millions of daily transactions
- Worked across full SDLC under enterprise compliance: requirements, design, implementation, automated testing, code review, CI/CD, and production support

**BACKEND JAVA DEVELOPER**

2011 - 2013

BinaryTools | Bogotá, Colombia

First professional engineering role. Built and maintained Univex, a secure information management system for sensitive government and defence clients.

- Developed backend features and PL/SQL procedures for Univex (univex.com.co), a mission-critical platform used by Colombia's Counterintelligence School, National Army, and Military University UMNG
- Gained early exposure to high-compliance, security-sensitive environments with strict confidentiality requirements
- Foundation in Java, Oracle Database, SOAP APIs, and enterprise system design

**PUBLICATIONS: IEEE PEER-REVIEWED**

IEEE CVPR & WACV are top computer vision venues globally (15-25% acceptance rates)

IEEE CVPR 2021 - Assistive Signals for Deep Neural Network Classifiers

IEEE 3DV 2022 - Attacking Image Classifiers To Generate 3D Textures

IEEE WACV 2022 - Transferable 3D Adversarial Textures using End-to-end Optimization

IEEE WACV 2021 - Defense-friendly Images in Adversarial Attacks: Dataset and Metrics for Perturbation Difficulty

IEEE IJCNN 2021 - Adversarial Attacks and Defense on Deep Learning Classification Models using YCbCr Color Images

## HONOURS & AWARDS

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Selected distinctions across AI leadership, research, cybersecurity competitions, and innovation grants.

### Exceptional Impact Award, VGW

*Aug 2025*

Recognised for contributions to revenue growth and shaping VGW's AI & Data strategy.

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### Hack The Box: Operation Blackout - 2nd in Australia / 41st Globally (796 teams)

*May 2025*

HTB's Global Cyber Skills Benchmark CTF, focused on AI/ML security challenges. Solved Neural Detonator (most complex AI/ML challenge) by reverse-engineering a hidden payload in a Keras model. Proof of hands-on technical depth at leadership level.

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### Global Talent Visa (Australian Citizen)

*Sep 2022*

Awarded permanent residency under Australia's Global Talent program for outstanding expertise in AI and Data Science.

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### ACS 1962 Medal Finalist

*Sep 2022*

Top 5 PhD thesis in Western Australia.

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### Distinguished Alumni of the Year

*Nov 2021*

Catholic University of Colombia, recognised for professional career and contributions to society.

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### COVID-19 AI Detection Project

*Jun 2020*

Led AI project (X-ray/CT anomaly detection) funded by the Colombian Government (\$800K AUD). Featured in national media.

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### Australian Government RTP Scholarship + UPA

*Oct 2018*

Competitive international PhD scholarship (100% fees covered) plus living stipend of \$33K AUD/year.

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### 1st Place, WA Ministry of Data Hackathon

*Aug 2018*

Deep CNN for real-time roadside hazard detection from video footage (Mainroads WA challenge).

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### Dean's List, Edith Cowan University

*Feb 2018*

Top 5% of School of Science graduates.

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### 1st Place, Startup Weekend Perth #11

*Nov 2017*

PetRecord: global pet vaccination platform with OCR, microchip reader, and cloud integration.

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### SPURonWA Government Innovation Grant

*Nov 2017*

SmartVision AI: \$21K government grant for real-time roadside hazard detection using Computer Vision.

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### Golden Key International Honour Society

*Aug 2018*

Member, awarded to top 15% of students at Edith Cowan University.