AI SKILL-UP TRAINING HANDBOOK

(4-Month Intensive Program for Applied AI)

Supervised ML → Deep Learning → NVIDIA Ecosystem

Prepared for: Team AI Skill Development

Organization: Data Chains

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1. Introduction

This compact handbook is a structured 16-week program designed to skill up the team in Artificial Intelligence. It is inspired by professional academies (Stanford, NVIDIA DLI, Coursera) and focuses on supervised ML, deep generative models, and NVIDIA AI ecosystem tools.

2. Month 1: Machine Learning Foundations

Learning Objectives: Build ML pipelines, apply model evaluation, and deliver supervised models.

Week	Topic	Hands-On Assignment	Resources	Status
1	Regression Models	Housing price prediction	Scikit-learn Docs, Kaggle	☐
2	Tree-based Models	Credit scoring using Random Forest	XGBoost, LightGBM Tutorials	☐
3	Model Evaluation	ROC/AUC, Cross-validation	Coursera ML Specialization	☐
4	Mini Project	Fraud detection pipeline	UCI ML Repo, Kaggle	☐

3. Month 2: Deep Learning & Generative AI

Learning Objectives: Train neural nets, CNNs/RNNs, VAEs, and GANs for generative tasks.

Week	Topic	Hands-On Assignment	Resources	Status
5	Neural Networks	MNIST classifier	TensorFlow/PyTorch Docs	☐
6	CNNs & RNNs	Image classifier, sentiment analysis	Stanford CS231n	☐

7	Autoencoders/VAEs	VAE for image reconstruction	DeepLearning.AI GenAI course	☐
8	GANs	GAN for synthetic data generation	Ian Goodfellow GAN papers	☐

4. Month 3: NVIDIA Ecosystem & Advanced GenAI

Learning Objectives: Apply LLMs, build RAG pipelines, and deploy with NVIDIA NeMo, Triton, RAPIDS.

Week	Topic	Hands-On Assignment	Resources	Status
9	LLMs & Prompt Engineering	Text classification, prompt tuning	Hugging Face, Stanford CS324	☐
10	RAG Pipelines	Chatbot with LangChain + FAISS	LangChain Docs	☐
11	NVIDIA AI Tools	Deploy model with Triton, try NeMo	NVIDIA DLI	☐
12	Capstone Project	Fraud detection, Risk scoring, or GenAI chatbot	Team project	☐

5. Month 4: NVIDIA Morpheus for Cybersecurity

Learning Objectives: Build real-time cybersecurity anomaly detection with NVIDIA Morpheus; deploy end-to-end pipelines for DataChains.

Week	Topic	Hands-On Assignment	Resources	Status
13	Morpheus Foundations	Pipeline setup	NVIDIA Morpheus Docs	☐
14	Streaming	Real-time	Morpheus	☐

	Anomaly Detection	detection	Tutorials	
15	Advanced Cybersecurity	Phishing/malware detection	AI Red Team Resources	☐
16	Morpheus Capstone	End-to-end deployment	Team Project	☐

6. Resources & References

• Books: Hands-On ML (Aurélien Géron), Deep Learning with PyTorch (Manning)

• Courses: NVIDIA DLI, Stanford CS231n, CS224N, Coursera Deep Learning Specialization

• Tools: Python, Scikit-learn, PyTorch, TensorFlow, Hugging Face, LangChain, NVIDIA NeMo, RAPIDS, Triton

7. Progress Tracker

Week	Topic	Assignment	Resources	Status
1	Regression	Housing price prediction	Scikit-learn Docs	☐
2	Trees	Credit scoring	XGBoost Docs	☐
3	Evaluation	ROC/AUC	Coursera ML	☐
4	Mini Project	Fraud detection pipeline	Kaggle	☐
5	Neural Nets	MNIST classifier	PyTorch Docs	☐
6	CNNs/RNNs	Image/Sentiment models	Stanford CS231n	☐
7	VAEs	Reconstruction task	DeepLearning.AI	☐
8	GANs	Synthetic data generation	GAN Papers	☐
9	LLMs	Text	Hugging Face	☐

		classification		
10	RAG	Chatbot pipeline	LangChain Docs	☐
11	NVIDIA Tools	Triton/NeMo deployment	NVIDIA DLI	☐
12	Capstone	Business project	Team Project	☐
13	Morpheus Foundations	Pipeline setup	NVIDIA Morpheus Docs	☐
14	Streaming Anomaly Detection	Real-time detection	Morpheus Tutorials	☐
15	Advanced Cybersecurity	Phishing/malware detection	AI Red Team Resources	☐
16	Morpheus Capstone	End-to-end deployment	Team Project	☐

8. Expected Outcomes

By the end of the 4 months, participants will:

• Be fluent in Supervised ML & Deep Learning

• Implement Generative AI (VAEs, GANs, LLMs)

• Gain hands-on experience with NVIDIA AI ecosystem

• Deliver an end-to-end business-relevant AI project