DEEP LEARNING ARCHITECTURE

A Roadmap to Modern AI

From simple regressions to the birth of LLMs

SYS. DIAGNOSTICS REVISION: A.B1

System Specs Roboto Mono

SPEAKER: Systems Architecture Specialist ↗

DOMAIN: Computer Science / Deep Learning

STATUS: 3rd Year Specialization

OBJECTIVE: By the end of this session, you will know exactly what drives today's tech—and how to build it.

SCALE: 1:1 | DRAWING NO: DLA-001 | ENGINEER: AI CORE TEAM | REV DATE: 2024.10.27

NotebookLM

HIERARCHICAL STRUCTURE OF INTELLIGENT SYSTEMS

AI (ARTIFICIAL INTELLIGENCE)

Mimicking Human Intelligence:
The overarching field encompassing systems that simulate human cognitive functions, reasoning, and problem-solving across various domains.

ML (MACHINE LEARNING)

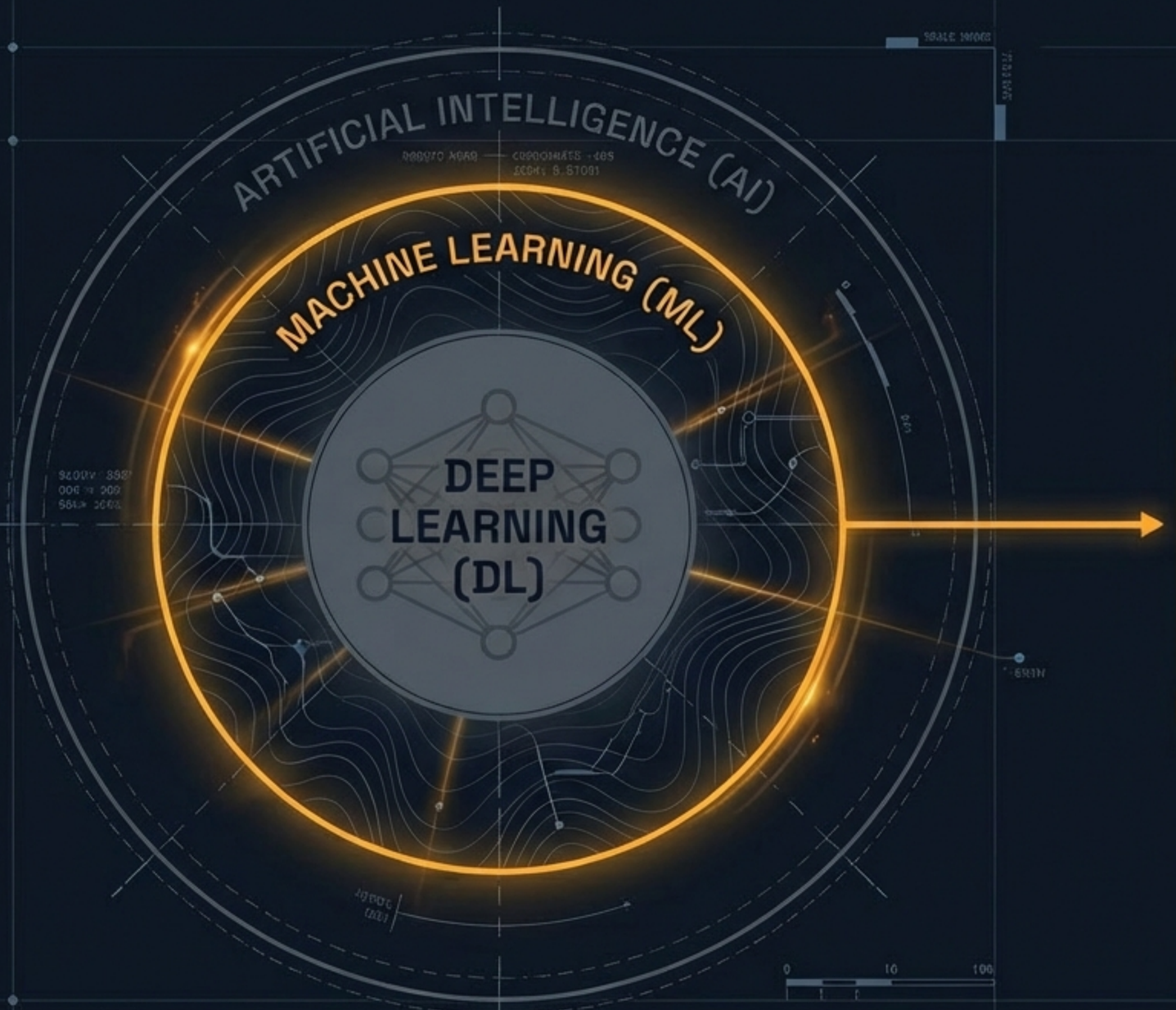
Learning Patterns from Data:
A subset of AI focusing on algorithms that learn from and make predictions or decisions based on data without being explicitly programmed for a specific task.

DL (DEEP LEARNING)

Multi-layered Neural Networks:
A specialized subset of ML inspired by the human brain, utilizing artificial neural networks with multiple layers (deep architectures) to process complex data representations.

NotebookLM

HIERARCHICAL STRUCTURE OF INTELLIGENT SYSTEMS



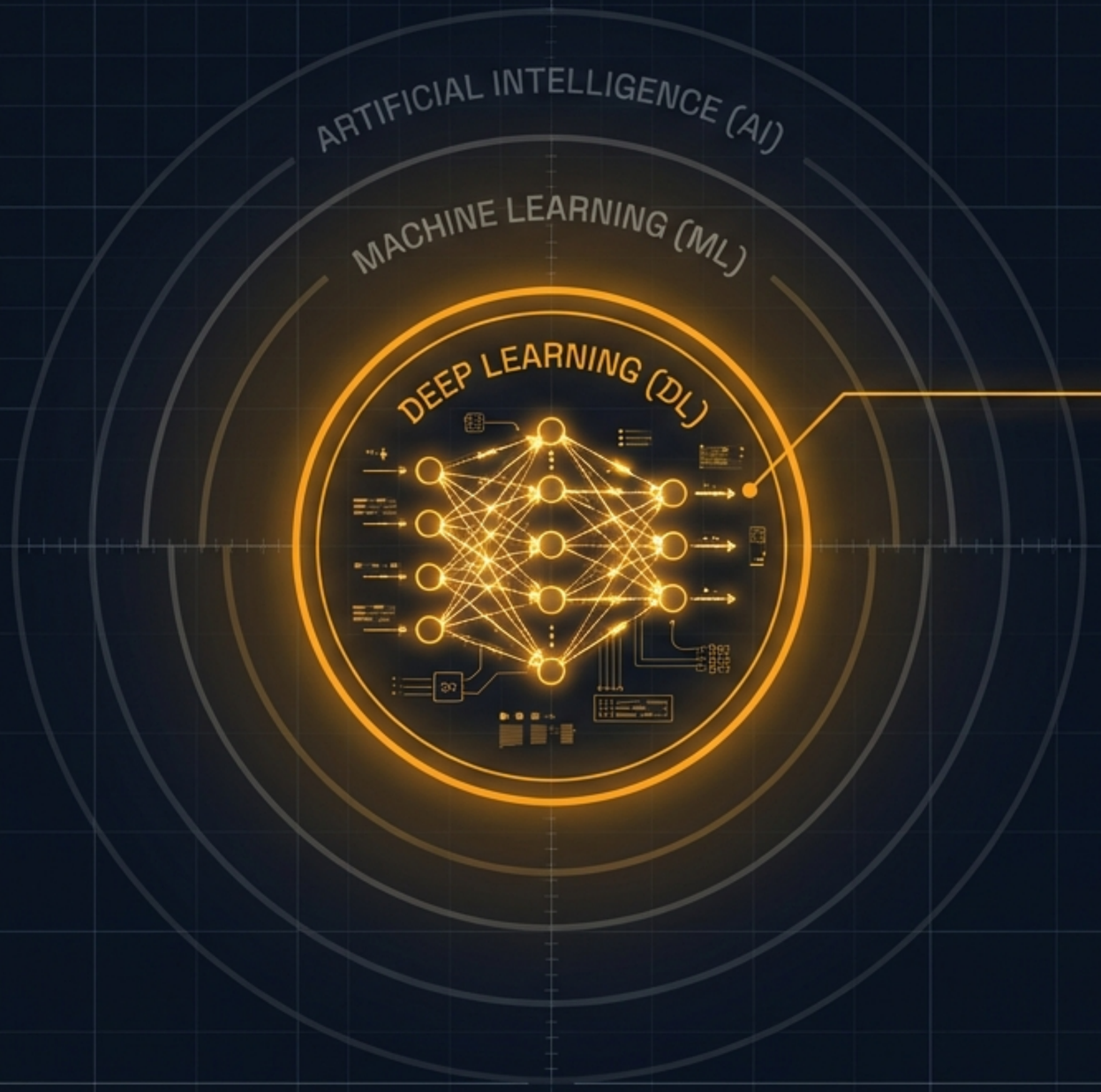
DOMAIN: Machine Learning

FUNCTION: Algorithms that learn patterns from data.

KEY EXAMPLES:
- Linear Regression (Price Prediction)
- Random Forest (Classification)
- Scikit-learn Library

NotebookLM

HIERARCHICAL STRUCTURE OF INTELLIGENT SYSTEMS

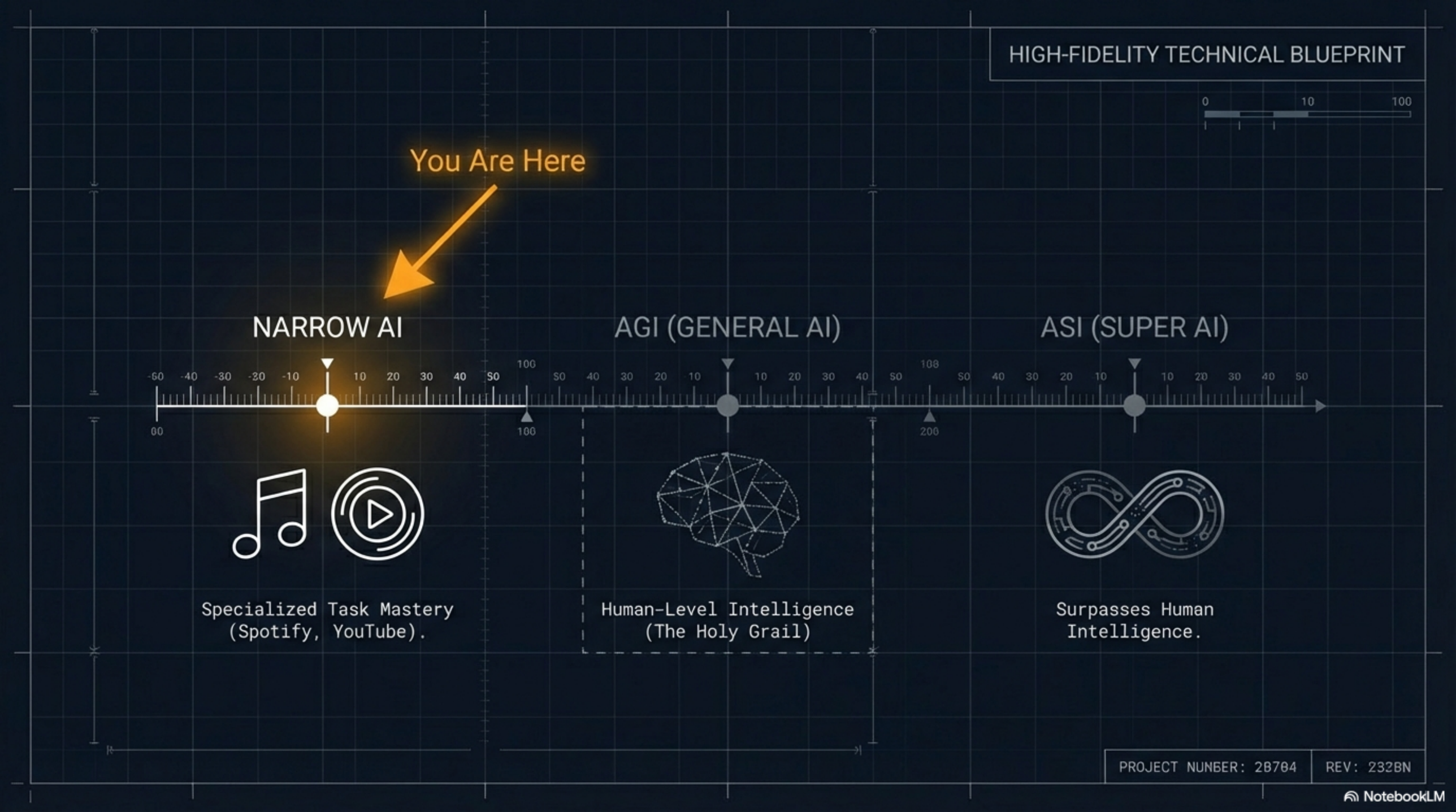


THE ENGINE: Deep Learning

- ARCHITECTURE: Multi-layered Neural Networks.
- CAPABILITY: Solves high-complexity problems (Perception & Generation).
- STATUS: The heavy lifter of the Modern AI Revolution.

PROJECT NUMBER: 20703 | REV: 2328N

NotebookLM


HIGH-FIDELITY TECHNICAL BLUEPRINT
You Are Here
NARROW AI
AGI (GENERAL AI)
ASI (SUPER AI)
Specialized Task Mastery (Spotify, YouTube).
Human-Level Intelligence (The Holy Grail)
Surpasses Human Intelligence.
PROJECT NUMBER: 28704
REV: 232BN

NotebookLM

THE THREE PILLARS OF MODERN DEEP LEARNING

01. NLP

Natural Language Processing

02. CV

Computer Vision

03. AUDIO

Speech & Audio Processing

PROJECT NUMBER: 2B7BS | REV: 232BN

NotebookLM

01. NATURAL LANGUAGE PROCESSING

Deep Learning applied to human language.

213 mm

THEORY:
Transformers &
Attention Mechanisms

736 mm

PRODUCT: Large Language Models (LLMs)

ChatGPT (OpenAI)

Claude (Anthropic)

Gemini (Google)

182 mm

Tech-to-Product

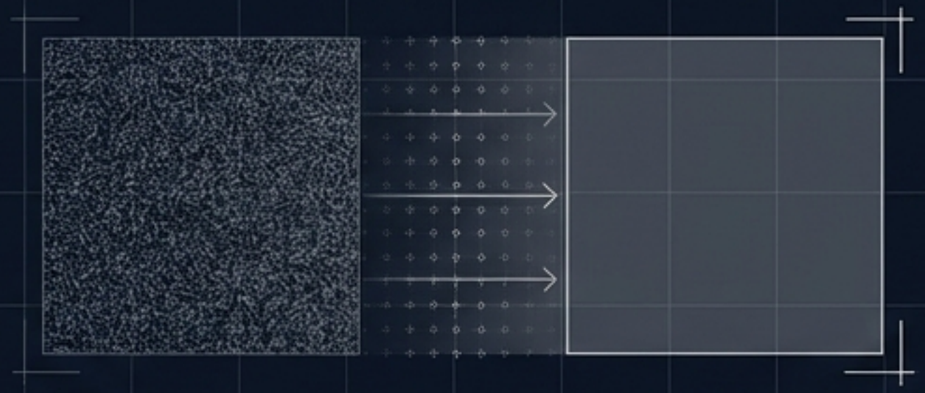
PROJECT NUMBER: 2B786

REV: 232BN

NotebookLM

02. COMPUTER VISION

Deep Learning applied to visual data (images & video).



218 mm

218 mm

THEORY: Convolutional Networks & Diffusion

740 mm

PRODUCT: Generative Imagery

Midjourney (Image Synthesis)

Sora (Video Generation)

218 mm

740 mm

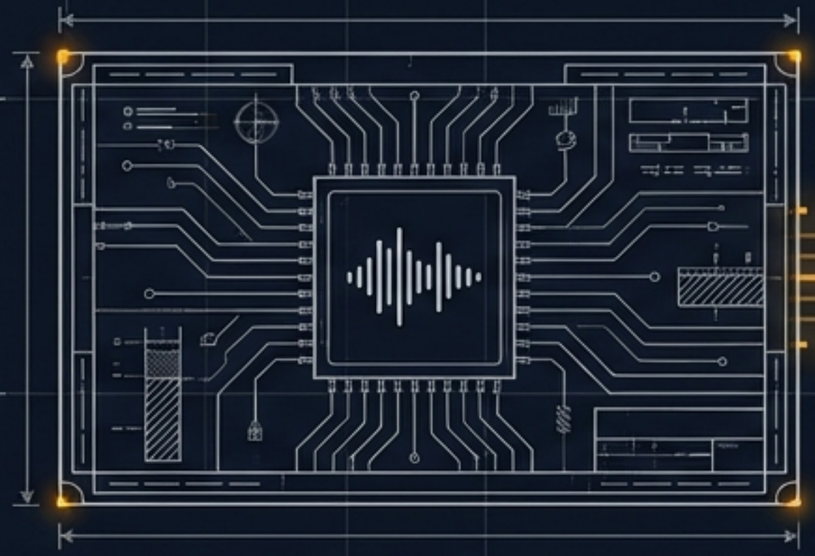
Tech-to-Product

PROJECT NUMBER:	REV:	SCALE:
2B78S	232BN	1:1

NotebookLM

03. SPEECH & AUDIO PROCESSING

Deep Learning applied to sound and voice synthesis.



THEORY: WaveNets & Sequence Modeling

PRODUCT: Voice AI & Real-Time Translation

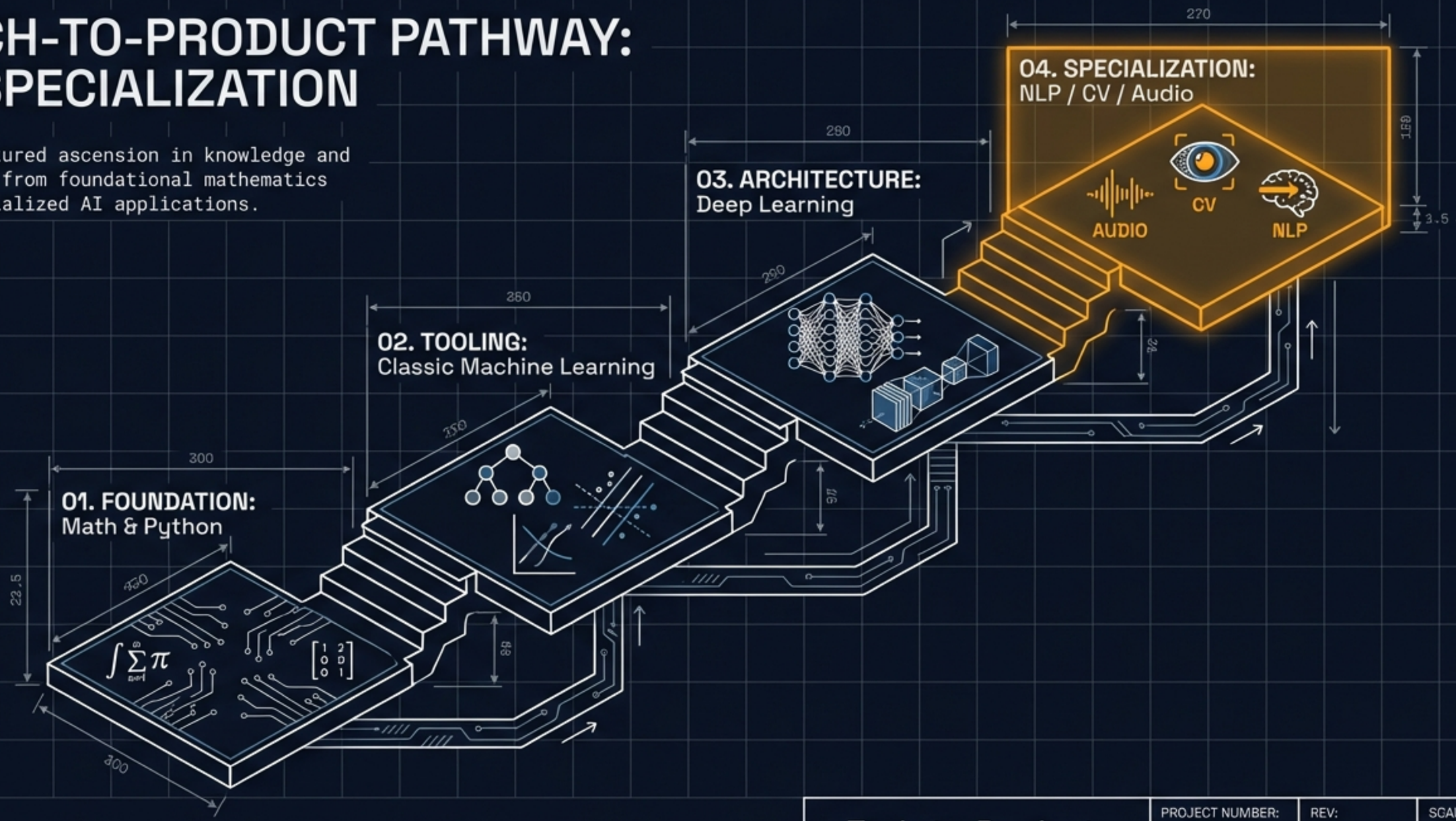
Tech-to-Product

PROJECT NUMBER:	REV:	SCALE:
2B78S	232BN	1:1

NotebookLM

TECH-TO-PRODUCT PATHWAY: AI SPECIALIZATION

A structured ascension in knowledge and skills, from foundational mathematics to specialized AI applications.



Tech-to-Product	PROJECT NUMBER: 2B78S	REV: 232BN	SCALE: 1:1

NotebookLM

300

LEFT MODULE

01

SECTION 01

MATHEMATICS & CODE

> Linear Algebra
> Statistics & Probability
> Python Proficiency

SECTION 01 FOUNDATION

270

RIGHT MODULE

02

SECTION 02

CLASSIC MACHINE LEARNING

> Data Pre-processing
> Scikit-learn Framework
> Regression & Classification Models

SECTION 02 TOOLING

Tech-to-Product

PROJECT NUMBER:	REV:	SCALE:
2B78S	232BN	1:1

NotebookLM

03

DEEP LEARNING

> Neural Networks Architecture

> PyTorch or TensorFlow

> Backpropagation

04

SPECIALIZATION

> Choose Your Pillar:

[] Natural Language Processing

[] Computer Vision

[] Speech & Audio

NLP Text

CV

Audio

Tech-to-Product

PROJECT NUMBER:	REV:	SCALE:
2B78S	232BN	1:1

NotebookLM

THE ACCELERATOR

Siddhardhan's 60-Hour Playlist

// COVERS ~70% OF THE ROADMAP
// FOCUS: Hands-on Projects
// BUILD: Recommendation Systems & Classification Models
// COST: Free Resource

NotebookLM

SYSTENIC RISKS

// ANALYZE // MITIGATE

SAFETY & ETHICS

450

DATA BIAS

320

320

320

PRIVACY CONCERNS

180

DEEPFAKES

450

180

SYSTEMIE RISKS
// MITIGATE

// ANALYZE

SYSTERIC RISKS

// ANALYZE

SYSTSRIC RISKS
// MITIGATE

// MITIGATE

Tech-to-Product

PROJECT NUMBER:	REV:	SCALE:
2B78S	232BN	1:1

NotebookLM

AGI
TIMELINE: 10–20 YEARS
THE INDUSTRY TRUTH:
AGI replaces the novice. It empowers the expert.
Your security lies in mastery.
START BUILDING TODAY.
PROJECT NUMBER: 2B78S
REV: 232BN
SCALE: 1:1

NotebookLM