

Exploring the Generative AI Landscape

From Basics to Hands-on
Applications

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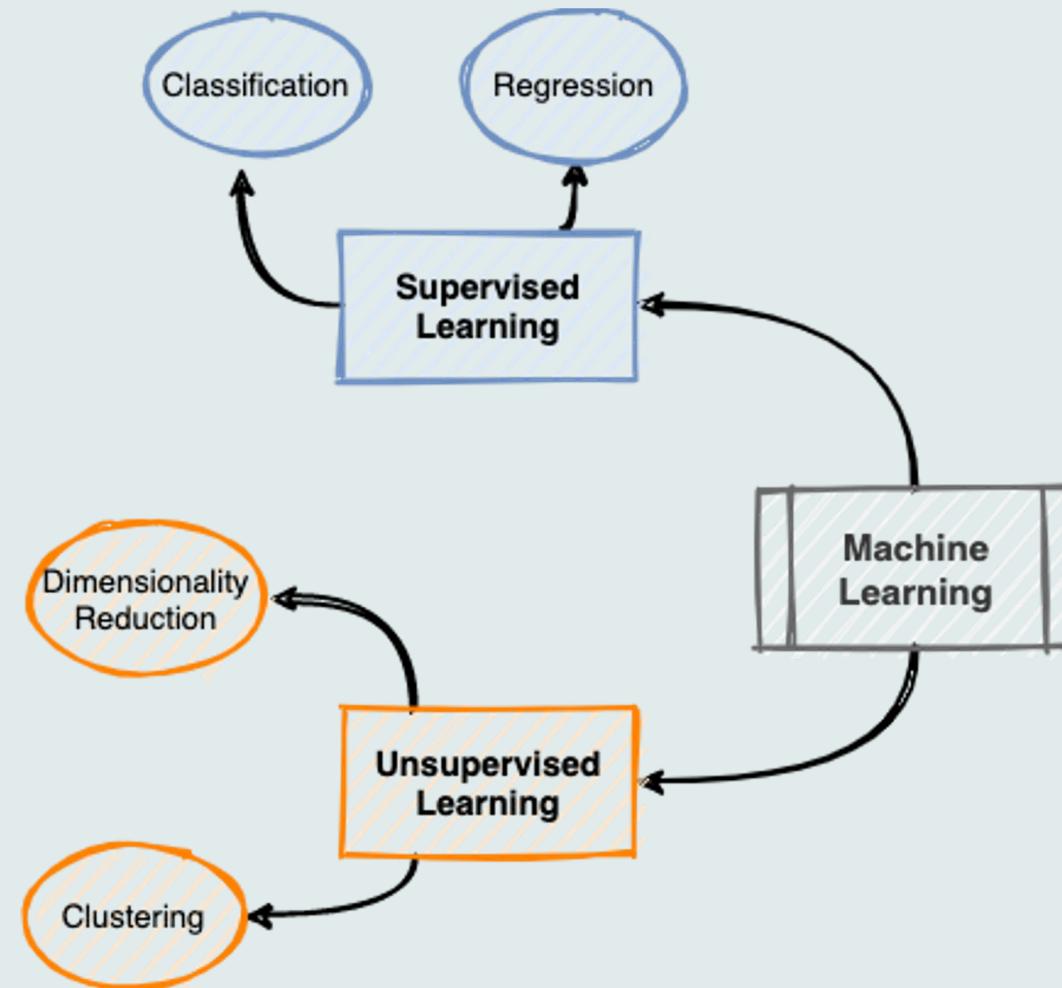


Agenda

- **What** is Generative AI ?
- What's All This **Hype** ?
- GenAI across Domains
- Is It for You/Your Organization?
- Agents of **Change**
- Quick Demo (Retrieval Augmented Generation)
- Limitations: System 1 Vs System 2 Thinking

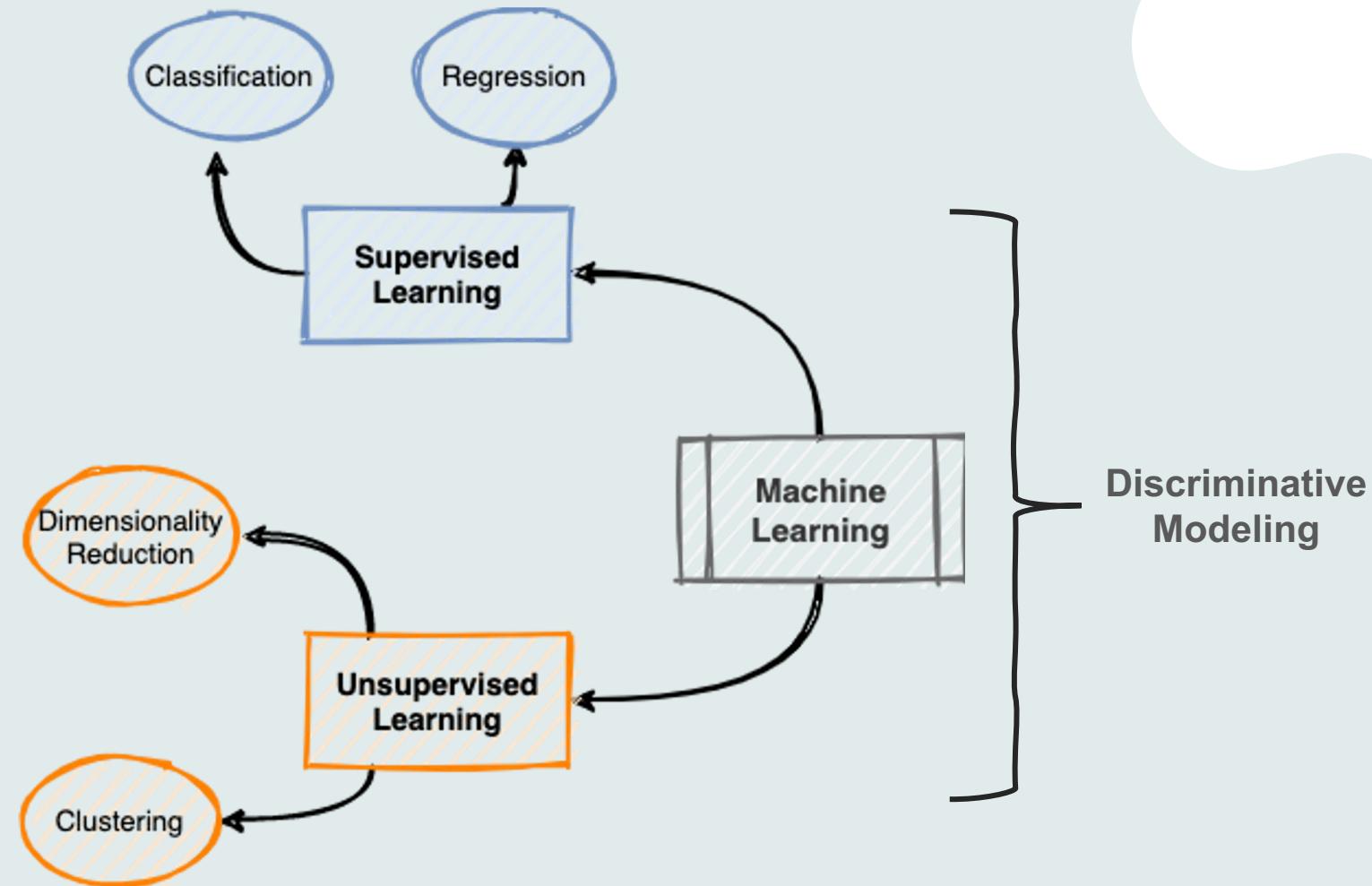
What is Generative AI ?

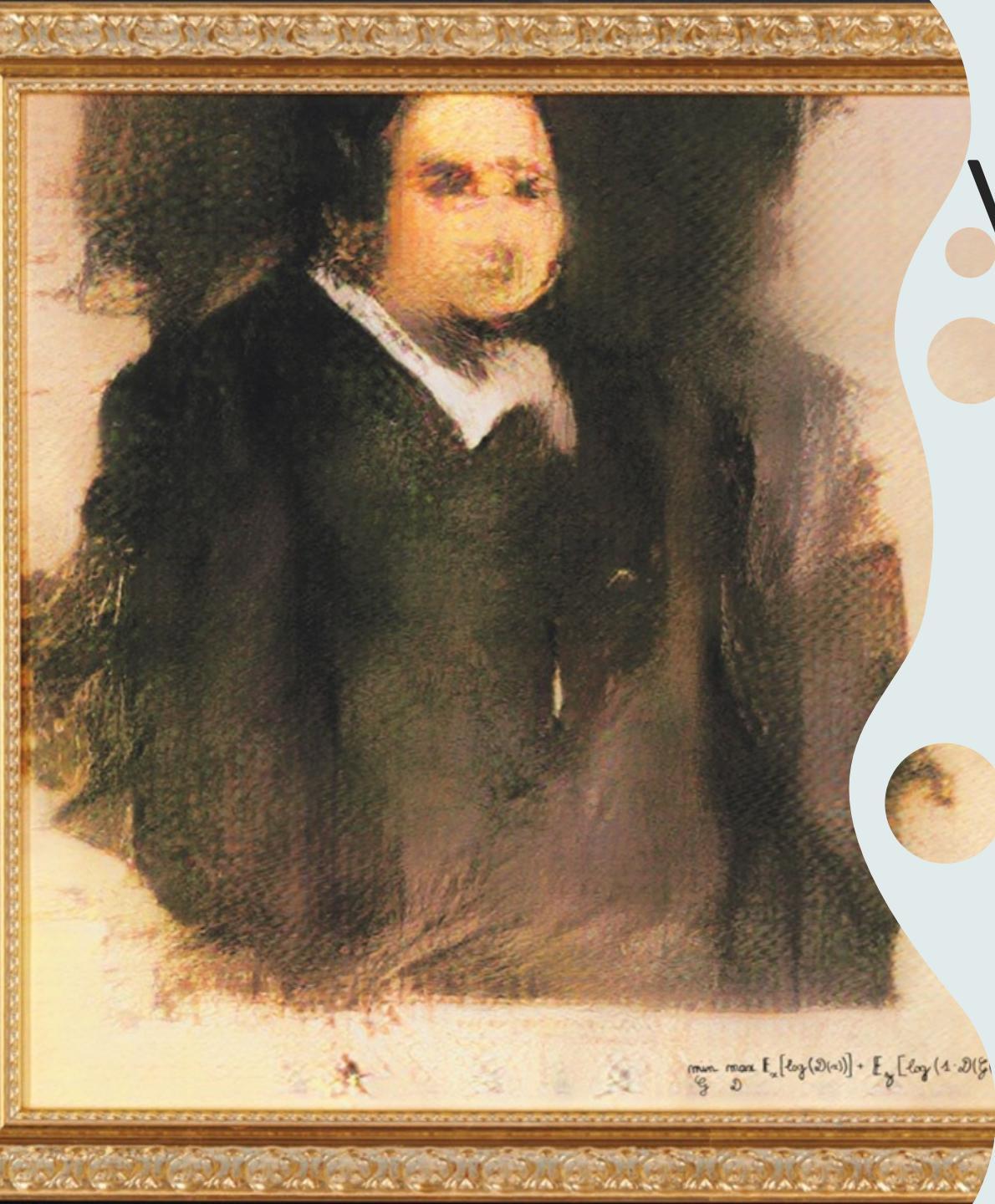
- **Supervised**
 - Regression
 - Classification
- **Unsupervised**
 - Clustering
 - Dimensionality Reduction



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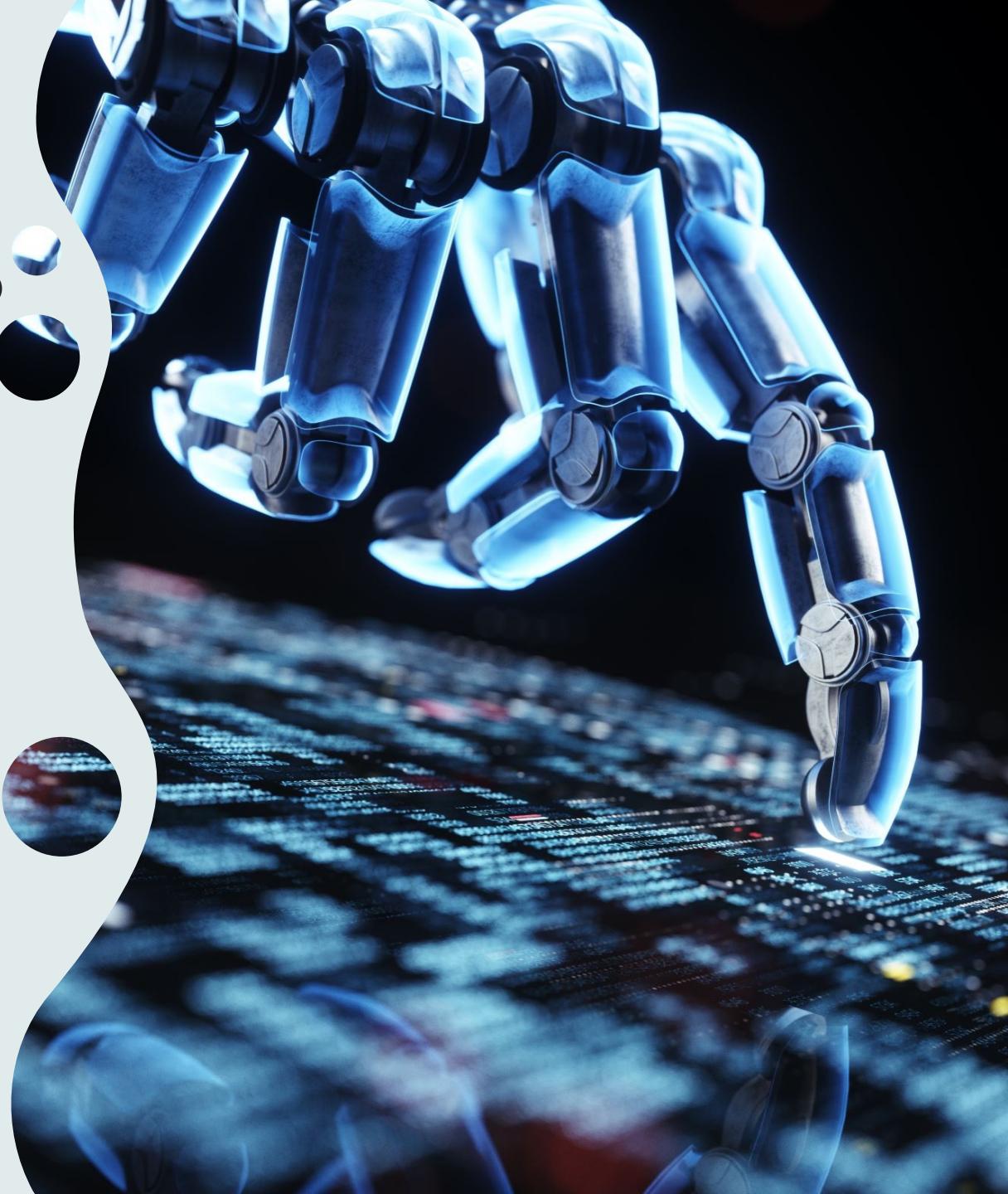
What is Generative AI ?

- Generative models are a class of models in the unsupervised machine learning space
- These help us model the underlying distributions responsible for generating the dataset under consideration

“There is tremendous amount of data easily accessible in most cases. Generative models analyze and understand such datasets”

What's All This Hype ?

- Amazing Capabilities
- No Code Tech Setup
 - Consumer Grade and Widespread Accessibility
 - Quick Turn-around and Fun
- Tech Side
 - Benchmarks out of the park
 - Accelerated funding & focus



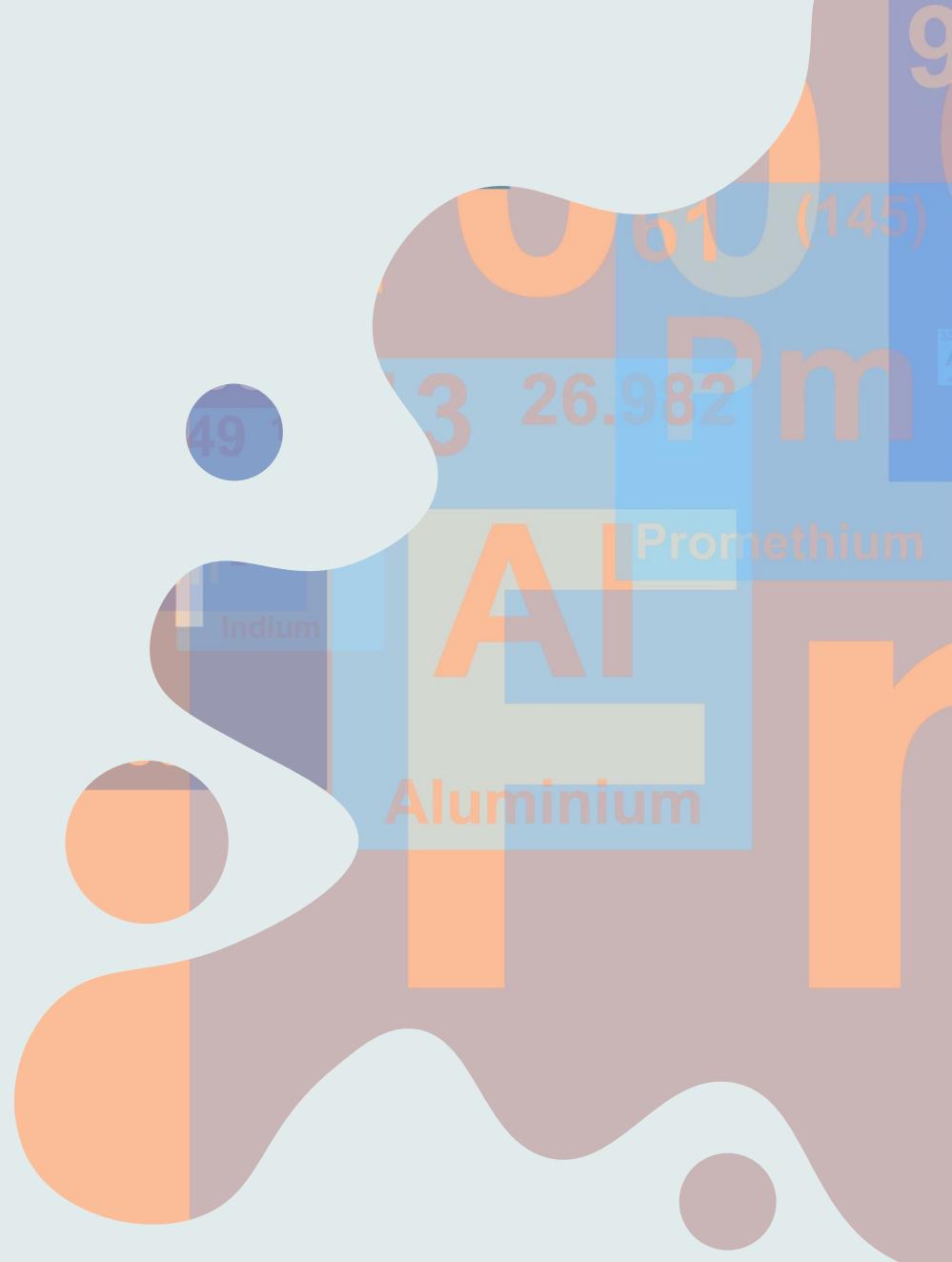
What's All This Hype ?

- **Productivity**

- Copilots for creative writing, coding, debugging, etc.
- Learning concepts, summarization and more
- Automation

- **Creativity**

- Democratize creative content
 - Logo creation, background music, art covers, etc.
 - Fast / Iterative improvements/modifications
- Content Creation
 - Digital art/posters, music, videos



GenAI Domains

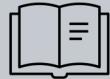


GenAI Domains



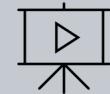
Computer Vision

- **Style Transfer, Denoise, Super Resolution, Segmentation**
 - GANs, VAEs
 - Stable Diffusion
- **Diffusion based Models**
 - Text 2 Image
 - Image 2 Image
 - Image In & Out Painting



NLP

- **Language Modeling:**
 - Seq2Seq
 - BERTs, GPT, GPT 2, T5
- **Instructions/Prompts:**
 - GPT3.5, GPT4
 - MosiacML, Falcon



Audio/Video

- **Speech 2 Text (prior 20???)**
 - Proprietary Models
 - Large clean datasets
 - WaveNet, WaveNet2
- **Whisper**
- **Text 2 Video | Image 2 Video**



Multi-Modal

- Google MuM
- GPT4
- Meta ImageBind
- VRDU

Is GenAI for You ?



End-User

Be vary of the limitations (hallucinations)
Be careful about license requirements of
the models/services
Be mindful of the data used for training
Large Models are expensive, keep an
eye on those credits/API costs



Product/Company/Institution

All things for the user
Weigh the Infrastructure requirements
vs Benefit
Do not forcefit/ride the hype



Ethical Dilemma and Biases

Agents of Change





Agents of Change

Retrieval Augmented Generation

Demo Time



Limitations



Thank You

Raghav Bali