**AI Timeline — 1950 to 2025 (Compiled by S. I. Romanova)**

**1950 — Alan Turing — “Can Machines Think?” → Logic foundations**  
→ Birth of the idea of *machine thinking* and the beginning of *cognitive logic.*

**1956 — Dartmouth Workshop — Birth of AI**  
→ John McCarthy, Marvin Minsky, and colleagues formally introduced the term **“Artificial Intelligence.”**

**1969 — Minsky & Papert — “Perceptrons”**  
→ A critical analysis of neural networks leading to a temporary decline in research interest.

**1986 — Backpropagation — Neural revival**  
→ The *renaissance* of neural networks (Rumelhart, Hinton, Williams) through gradient backpropagation.

**1997 — LSTM introduced**  
→ Hochreiter and Schmidhuber solved the *vanishing-gradient problem*, enabling long-term sequence memory.

**1998 — LeNet & early CNNs**  
→ Yann LeCun developed **LeNet** for handwritten-digit recognition — a forerunner of modern computer vision.

**2012 — AlexNet — Deep Learning breakthrough**  
→ The deep CNN by Krizhevsky, Hinton & Sutskever triumphed in ImageNet, opening the **era of deep learning.**

**2014 — GANs — Generative Revolution**  
→ Ian Goodfellow introduced **Generative Adversarial Networks**, marking the rise of *AI-driven image synthesis.*

**2017 — Transformers — “Attention is all you need”**  
→ The model by Vaswani et al. introduced *self-attention* and *context modeling*, launching GPT/BERT architectures.

**2020 — Diffusion Models — Denoising Generation**  
→ Jonathan Ho et al. proposed stochastic *denoising models* — the modern foundation of generation (DALL·E 2, Midjourney, Stable Diffusion).

**2023–2025 — Quantum AI, Multimodal Agents, Physics-informed Models**  
→ Integration of *quantum states*, *multimodal systems*, and *physics-informed learning* (PINNs, hybrid AI, Romanova resonance model).