

Levels of AIX: The Future of AI and the Human Experience

Overview

Artificial Intelligence (AI) is impacting the world we live in. It can already be found across the systems, services and devices that we use every day. And while there's been exciting advancements in AI's applications, the AI community lacks a common framework and language for discussing advancements across the variety of domains, such as on the road, at home, at work, and in public spaces.

This is why LGE and Element AI have partnered to research and develop this framework, proposing a shared definition for advancements in AI. Grounded in the imaginative work of foresight and research into the cutting edge of applied AI science and engineering, the framework consists of four clear levels. Each level represents a step-change in capability that will allow AI-powered products and services to provide new benefits to users and society. We believe the future of AI should be human-centric, and so have coined the term AIX - Artificial Intelligence Experience, which we hope will sharpen the public discourse around this important topic.

To make clear what these different levels might mean in practice, we have included four underlying dimensions and also considered ethical implications for how AI must remain safe and trustworthy at every stage.

Unlike previous waves of automation that reshaped human spaces and workflows to integrate machines, we believe the transformative potential of modern AI is to reverse this trend. By creating devices, systems, spaces, and infrastructure that adapt to people and their needs, increasingly sophisticated AI can help unlock a new wave of growth in productivity and well-being.

This is a lofty vision, and we recognize that building human-centric commercial AI solutions will require expertise and effort from the entire AI ecosystem. We see this framework as a starting point for that vision and look forward to input and partnership with researchers and industry, as we continue to collectively shape the future of human-centric AI.

Here are the four levels and their defining traits:



Level 1

Efficiency

Names

Definitions

AI **facilitates** specific functions with systems and devices, making user interactions more efficient and effective



Level 2

Personalization

AI uses **pattern learning** to recognize, optimize and personalize functions in order to improve and simplify interactions for users



Level 3

Reasoning

AI uses **causality learning** to understand the cause of certain patterns and behaviours, this information is used to predict and promote positive outcomes for users



Level 4

Exploration

AI uses **experimental learning** to continuously improve, by forming and testing hypotheses it uncovers new inferences, seamlessly adding value to users' lives and enabling a deeper affinity

Pervasiveness In Our Lives

Familiar

Systems and devices that utilize AI are appearing in user's everyday lives

Common

AI is optimizing most devices at the edge and most systems through the cloud

Universal

AI is everywhere and interconnected for the benefit of all devices and systems

Foundational

AI forms a core component of the infrastructure for all devices and systems in society which share and learn collectively

Environmental Awareness



Perceives

Perceives specific, pre-defined information and acts on it accordingly to increase its efficiency

Recognizes

Recognizes patterns and uses them to make better predictions to increase relevance for users

Understands

Understands the patterns and principles across systems in order to meet predefined missions. Uses reasoning to respond to new situations by applying unique approaches

Explores

Seeks to test and validate the underlying conditions of a situation by analyzing data from a broader set of external sources to inform its inferences

Collaboration



Independent

Works alone or relays commands from one system to another

Connects

Connects with other devices within a user-controlled system so that the user can use one device to control others

Coordinates

Understands the larger interconnected system and the function of different devices and shares learning outcomes to achieve a broader mission

Orchestrates

Identifies gaps in data and user understanding then orchestrates across internal and external systems to find and apply new knowledge as it scrutinizes and optimizes its hypotheses

User Understanding



Agent

Perceives user inputs and logs past inputs

Assistant

Recognizes and distinguishes users and their unique behaviours and preferences

Companion

Interprets the user's mood from contextual understanding of multiple data points and reasons about social relations to predict and support how users will interact

Sage

Understands how to influence users - enabling them to trust new information and approaches by providing evidence, nudging behaviours in service of a broader purpose

Autonomy



Task-oriented

One-off actions

Can execute specific commands within specific parameters to achieve a specific task

Goal-oriented

Multiple actions

Works out various options for achieving a given goal and presents them to the user for selection or is pre-programmed to efficiently meet the desired goal

Mission-focused

Long-term actions

Understands users and its environment in order to predict, recommend and execute solutions to assigned missions

Purpose-driven

Exploratory actions

Using local context and external sources of knowledge, it balances users' competing needs and interests and is able to take creative approaches to influence user behaviours, whilst in service of the user's higher purpose

Level 1

Level 1

Preset with a grocery list, the smart fridge automatically orders groceries when items get low.

Level 1

Controlled by the household AI that is programmed to conserve water, the sprinkler senses there was rain recently and so foregoes watering the lawn.

Level 1

Level 2

With the help of a laundry robot, clothes are picked from the floor, sorted and washed according to desired settings.

Level 2

Level 2

Recognizing that the user has a business trip in their calendar, the AI displays relevant trip info, suggesting a route to the airport based on real-time road construction updates.

Level 2

A smart mirror recognizes the user and displays biometric data taken from wearable and environmental health sensors while reminding them to take their medicine.

Level 2

Level 3

Sensors on street lights monitor road conditions, coordinating with individual cars and triggering city-wide traffic-controlling measures.

Level 3

Level 3

Based on data from wearable health sensors, the AI makes diet and exercise recommendations to help the user lose weight ahead of an upcoming beach holiday.

Level 3

The weather forecast calls for snow. The AI alerts the family to dress warm, preheats the oven and orders ingredients to prepare their favourite hot meal.

Level 3

The car's AI is an extension of the home and knows that the user is running late, suggests altering the usual route to ensure that an appointment is not missed and provides a calming environment.

Level 4

Level 3

Level 4

The AI senses the user is stressed about a job interview in their calendar. It offers to help them prepare by creating interview questions and providing feedback, while also setting the car route, the alarm and suggesting wardrobe options.

Level 4

New research shows that reducing screen-time in the evening will result in improved sleep. The household AI suggests a series of changes to the family's bedtime routine and monitors for positive results.

Level 4

A car's AI interfaces with the smart city to experiment with different routes, departure times and driving speeds, optimizing journeys based on daily user objectives and other goals such as fuel efficiency or journey time.