

AI WORLD SCHOOL
EBOOK

aiwS

AI World School



WELCOME TO THE
WORLD OF AI & CODING

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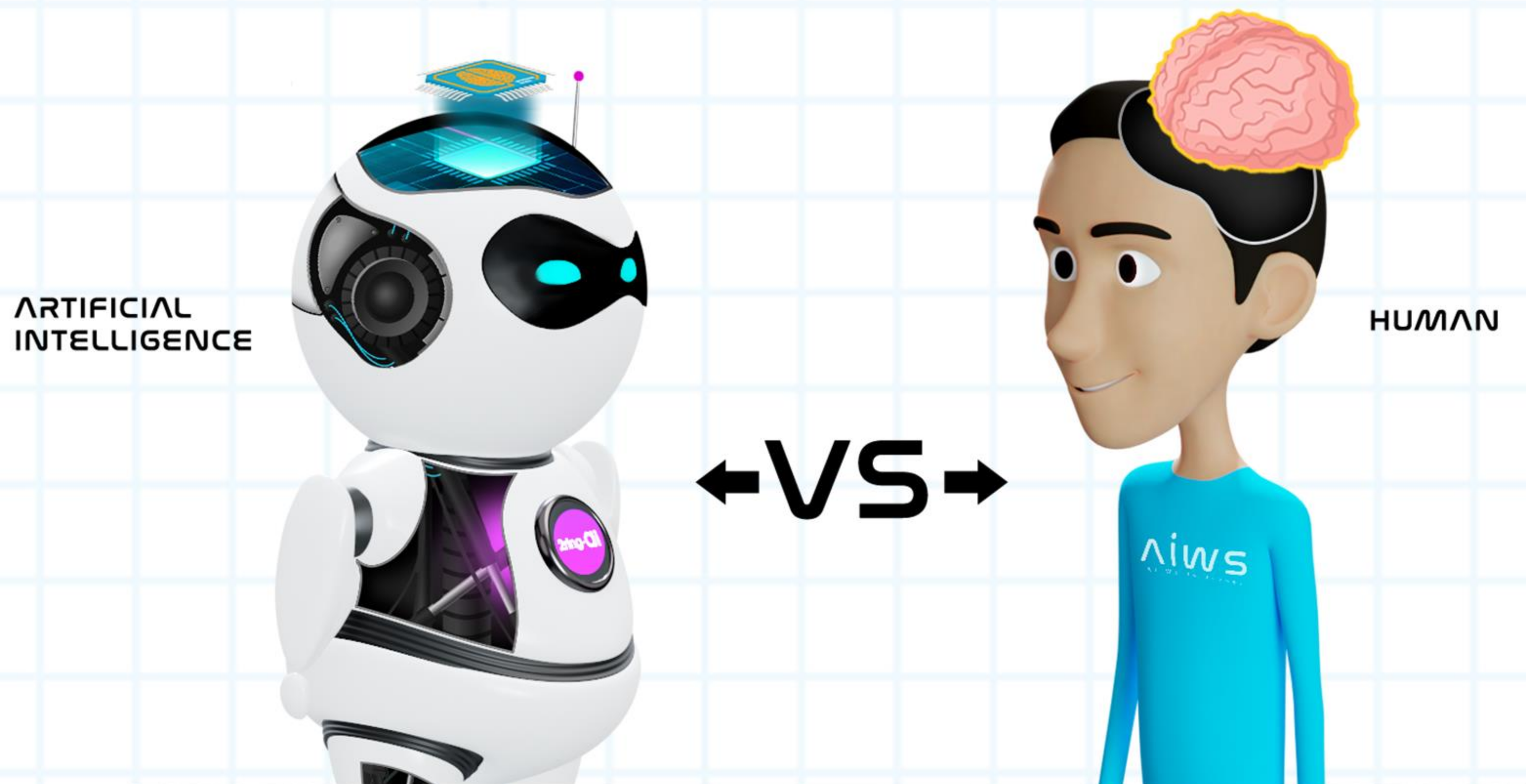
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Introduction

A 1. Who is this E-Book for ?



This E-Book book gives the reader an introduction to AI & Coding and its relevance in on how these transformational technologies benefit schools & K12 student learners across the globe.

Every single day we are passive consumers of Coding & Artificial Intelligence (AI). From the google maps we use to get to work, Youtube videos our family watches to GMAIL, Whatsapp, Alexa, Netflix, Facebook, Spotify and so much more. The list is endless!

AI is the ability of a computer or machine to learn and think. For example, Google Translate can now allow us to “speak” and understand any language in the world, while Alexa connects to your information (calendar, gmail, amazon etc) using machine learning to help you make smarter decisions.

The E-Book is a guide which helps parents and school educators make young students Future Ready.

About AI & Coding

B 1. Why should one learn AI ?

Children today are surrounded by and brought up around AI powered devices.

Artificial Intelligence is used so much in our everyday lives that we need to make sure that our children understand its impact and potential for the future of work and learning.

Artificial Intelligence is expected to fuel the global digital economy and skills required to flourish in future careers which are going to be very different from what it is today.



A recent Gartner report predicts one in five workers will have some form of Artificial Intelligence as a co-worker. Forrester predicts by 2021, automation technology will account for the work of nearly 4.3 million humans worldwide.

The World Economic Forum says AI will displace 75 million jobs but generate 133 million new jobs world wide by 2022. These new jobs will target AI related skills among people. (Courtesy Forbes)

More than ever, now is the time for our children to play and learn with AI.

At AI World School we recognize the urgent need of how best to prepare children, to be successful in their careers, to be life-long learners, and to flourish in the era of AI.

B 2. Is coding an important skill to learn ?

Our mission at AIWS is to start all young students on their coding journey and give them the confidence and ability to code.

Coding is the new literacy.



Children who learn coding from a young age are prepared for the future as they are to work with and understand technology around them.

Everyone around the world is talking of the oncoming tsunami of technology disruptors from autonomous cars, to Artificial Intelligence, to robots and so on.

Artificial Intelligence has already begun disrupting entire industries, and it's poised to completely transform the way we live and the way we work and will change the complete landscape of countries and societies.

Artificial Intelligence is expected to fuel the global digital economy and thus has gained geo strategic importance.

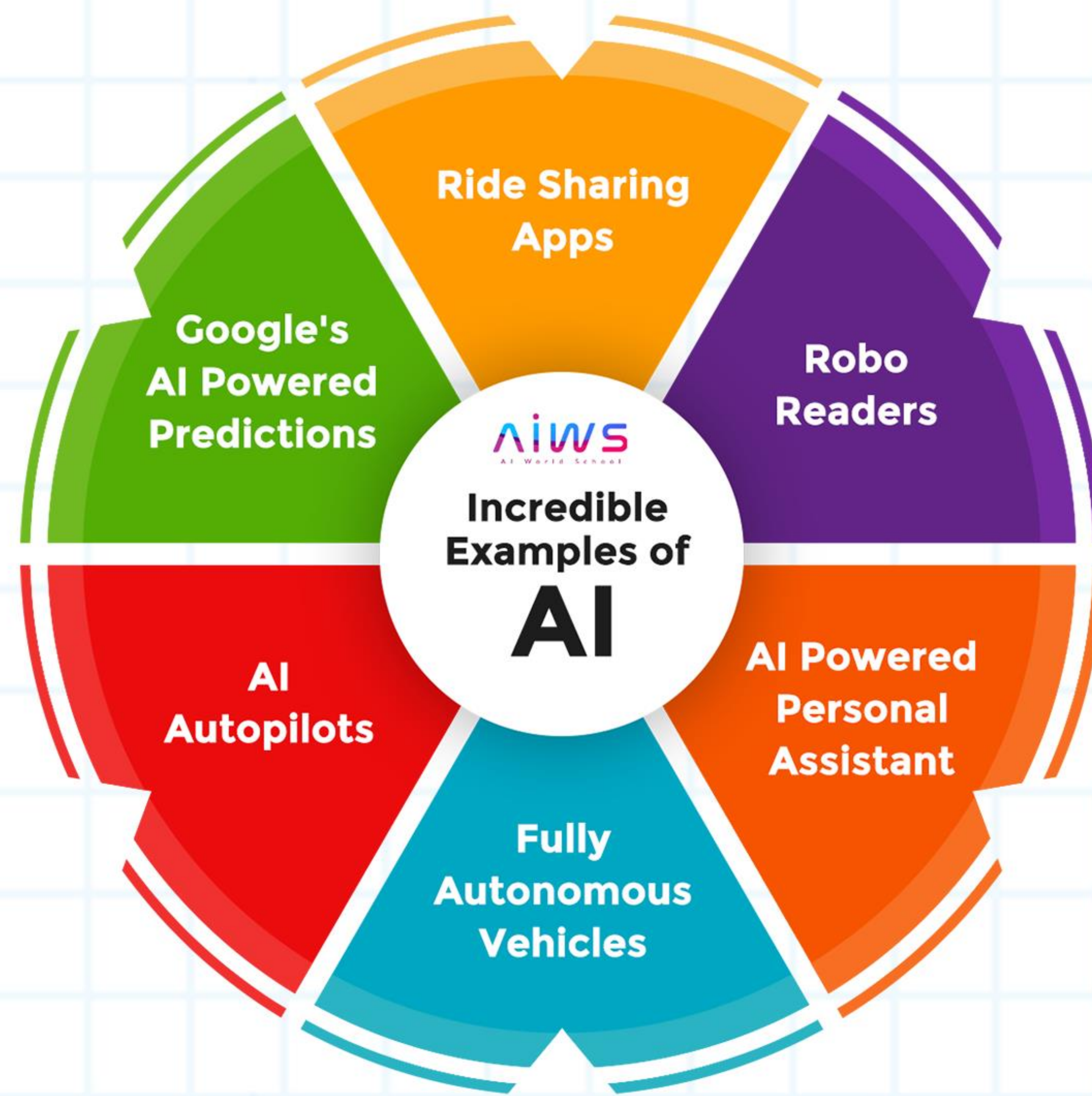
Artificial Intelligence is used so much in our everyday lives, we need to make sure that our students understand its impact and potential for the future of work and learning.

B 3. Is this the right time for school students to start learning AI ?

AI is playing an increasingly prominent role in today's world.

From photo editors on smartphones, recommendation engines of Netflix & Youtube, to intelligent assistants (Siri, Alexa, Google Assistant, Cortana etc.) & self-driving cars (their in-built AI is able to access the internet using speech recognition).

E.g. Translation of languages from English to Japanese via Google Translate.



Informed citizens need to understand the basics of Artificial Intelligence as AI can influence human societies and the planet in both positive and negative ways.

AI is the most important change force that will impact the lives and livelihoods of students.



B 4. Are our students prepared for a world driven by AI?

Artificial Intelligence has already begun disrupting entire industries, and it's poised to completely transform the way we live and the way we work and will change the complete landscape of countries and societies.

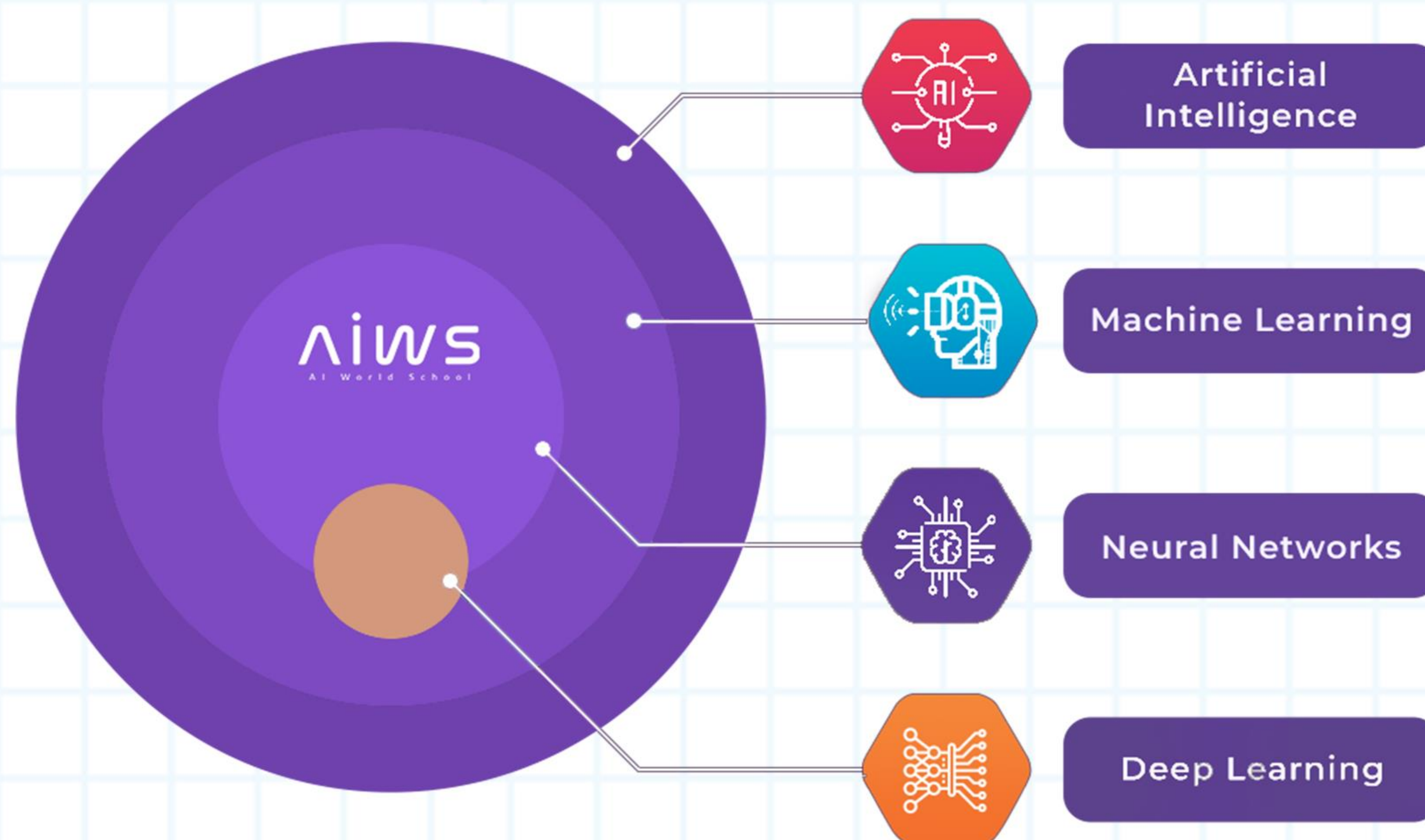


Artificial Intelligence is used so much in our everyday lives, we need to make sure that our students understand its impact and potential for the future of work and learning.

B 5. What is Artificial Intelligence or AI?

Artificial Intelligence is a broad field of study in Computer Science having the ability to perform intelligent tasks, such as:

- A. Perception
- B. Comprehension
- C. Machine learning
- D. Natural human - machine interaction



Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving.

The ideal characteristic of Artificial Intelligence is its ability to rationalize and take actions that have the best chance of achieving a specific goal.

B 6. Is AI already part of our life ?



The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.

- Mark Weiser



AI is one of those profound technologies which is already part of our daily life.

Google maps, Google Search, Apple's FaceID etc are few examples of how AI is already embedded into our lives. This is just the beginning!

AI is not a futuristic vision, but rather something that is here today and being integrated with and deployed into a variety of sectors. This includes fields such as finance, national security, health care, criminal justice, transportation, and smart cities.

There are numerous examples where AI already is making an impact on the world and augmenting human capabilities in significant ways.

B 7. Can schools afford to be left behind ?

If we don't equip our students with the requisite AI skills, the digital divide will widen and leave these future citizens culturally and economically behind. These disruptive technologies offer unparalleled opportunities for risk takers and innovators.

And therefore we believe that this must be addressed at the school level & not at the college or at the career stage, by which time it may already be too late.

Also by the time most of today's K-12 students enter the workforce, AI would be well established. That's why Artificial Intelligence needs to become part of basic technology literacy as part of school curriculum.



In order to compete in a fast changing world, K-12 schools will therefore need to create curriculum around Artificial Intelligence.

“What we really want is for kids to understand the power of this tool and find ways to use it that we wouldn't have thought of.”

-Hall Davidson,
Senior Director Discovery Education



Artificial Intelligence should be a critical element of any school’s STEM curriculum. In order to prepare K12 students for an AI driven world, we feel that every school should offer AI learning curriculum to their students.

B 8. What are the impacts of AI ?

AI can impact human societies and the planet in both positive and negative ways. It is therefore important for students to understand & develop criteria for ethical design, for deployment of AI systems and for responsible use of AI.

Positive impacts – examples

- Microsoft, Google, Intel etc are using AI to help with conservation of wildlife.
- Researchers at Stanford University have created an AI algorithm that can identify and diagnose skin cancer.

- Google is working with researchers at Shankar Nethralaya India to identify cardiac diseases through retinal scans.
- And more ...



Negative impacts - examples

- Bias (such as gender bias or racial bias etc) in the data sets used to train an AI system could lead to consequences.
- AI programmed to do something devastating - Autonomous weapons that can kill. AI arms race could inadvertently lead to World War 3.
- AI is programmed to do something beneficial, but it develops a destructive method for achieving its goal.
- And more....

B 9. How important is it to learn about Ethics in AI ?



AI plays a vital role in the development of humanity in the near future.

Fundamental questions that arise are:

- How should AI systems make decisions based on human morals ?
- How should humans approach decisions made by AI systems ?
- What are the risks involved in the AI ?
- How can we control this ?

The rise of AI systems have paved way for some ethical issues which includes:

- Bias
- Transparency
- Privacy issues
- Digital Manipulation
- And more...

Preparing School Students for the Future

C 1. About AI World School

We are a team of educators & technologists who are passionate about helping students explore & understand the fundamentals of Artificial Intelligence and coding technology and the role that it plays in our day to day lives.

Our mission is to help students become FUTURE READY as they aspire for careers that will gradually require understanding in Artificial Intelligence as a key skill.

AI World School is brought to you by [Robotix USA | India](#).

AIWS is an online self-learning education platform providing AI and coding to schools and students @ home. Our AIWS platform is built to be intuitive, self-learning, self-paced and self-directed.



At AI World School we recognize the urgent need of how best to prepare children, to be successful in their careers, to be life-long learners, and to flourish in the era of AI.

We seek to empower children to explore, learn and create with AI in an age-appropriate environment.

Finally we believe that AI learning should be playful, fun, creative, collaborative, empathetic, ethical, inclusive, purposeful and for social good.

Advisory Board



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Dean SASTRA University,
TN, India



Dr. Ken Kahn

Professor,
Oxford University, UK

C 2. Three reasons parents, students and schools choose AI World School



1. Putting students first | Building AI & Coding skills.

- Transformational AI Education Impacting students.
- Designed & curated by Engineers & Educators trained & certified by ISTE - USA, Intel , IBM and Professors from Oxford University UK & Graz University of Technology, Austria.
- Well researched course structure focussing on the five Big Ideas of AI.
- Comprehensive experiential curriculum aligned to CSTA & AAI international standards.
- The 100+ hands-on real-time AI Coding Experiences develop computational thinking & critical thinking skills of the learner.

- Real time AI in action using mobile & laptop based coding platforms.
- Courses are intuitive, self-paced, self-learning & self-directed with projects.
- Our technical team are experienced in teaching K12 robotics & coding having 120 years plus of collective experience.

2. Enjoy life long membership | AI community

- Join a network of like minded peers.
- Opportunity to communicate, showcase and interact with others in forums.
- Connect to a professional AI learning community.

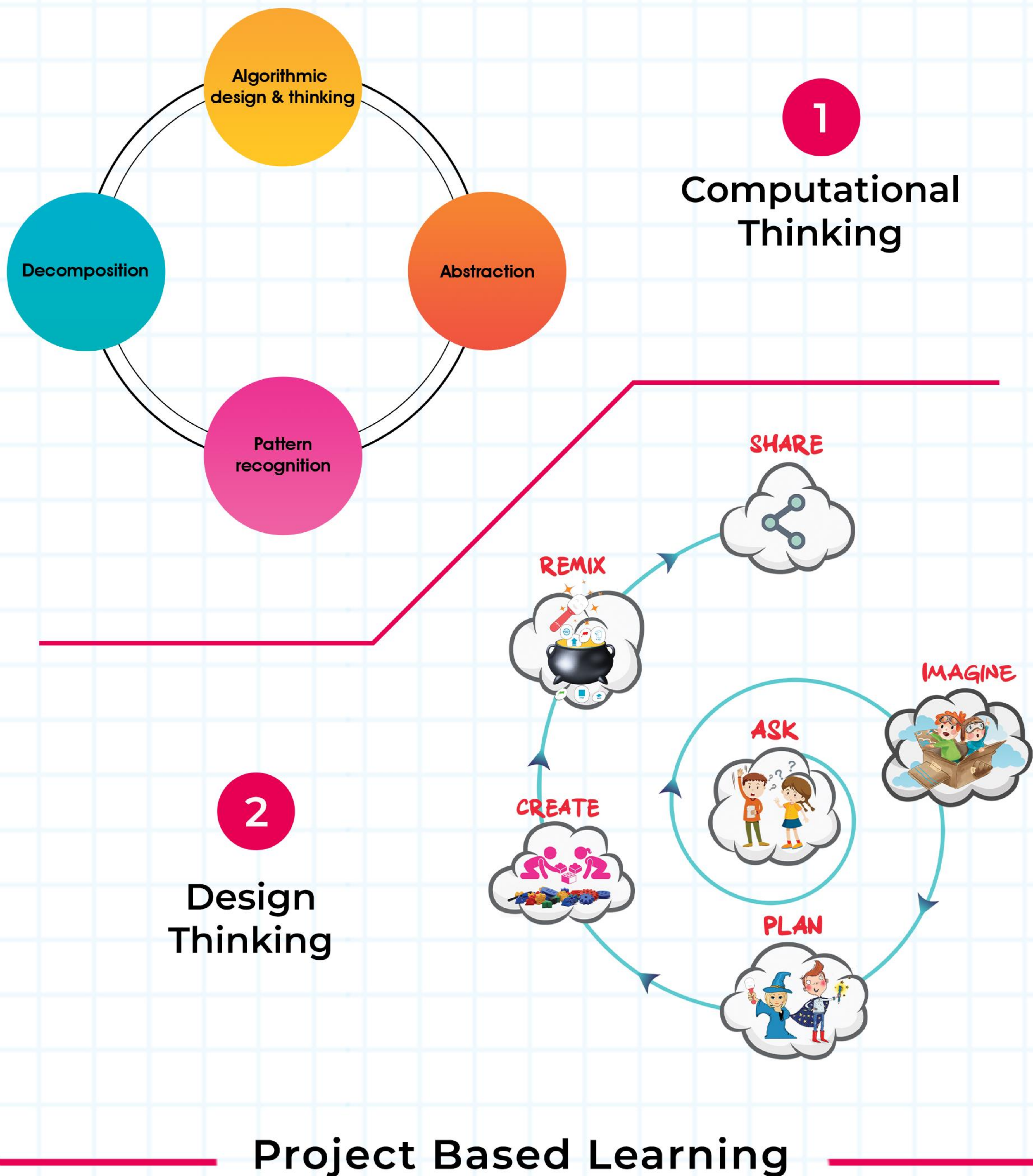
3. AIWS saves you time & money

- Discover & get the latest AI trends | exclusive feature for registered users.
- Let our fantastic technology team do the research for you.
- Explore the many free resources on our platform.
- Reasonably priced courses.

C 3. What are our AI learning & exploration experiences?

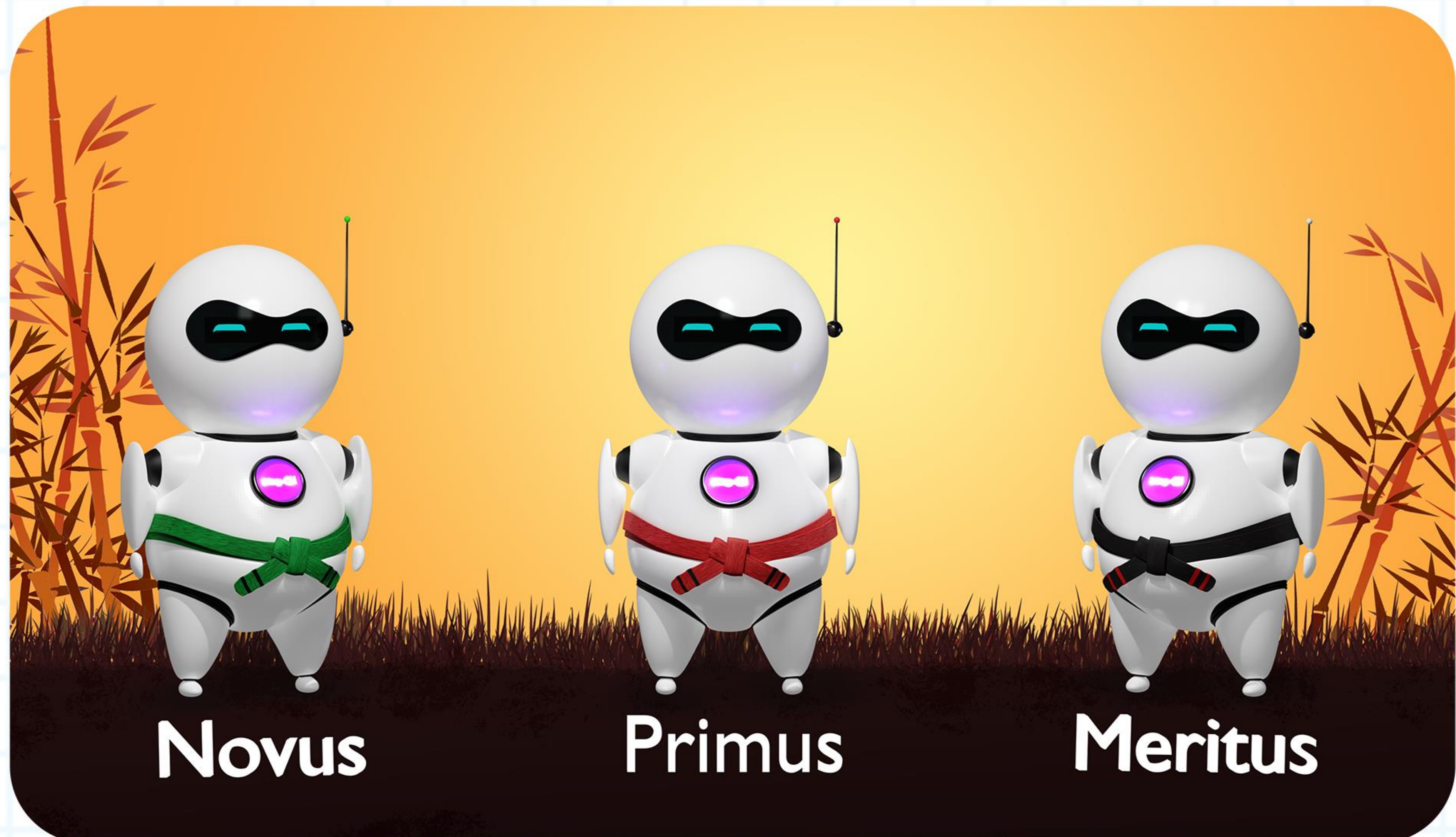
AI Learning Methodology

Hands-on & experiential instructional framework is focused on 3 philosophies



C 4. What are the AI courses offered ?

AI World School offers 3 levels of courses



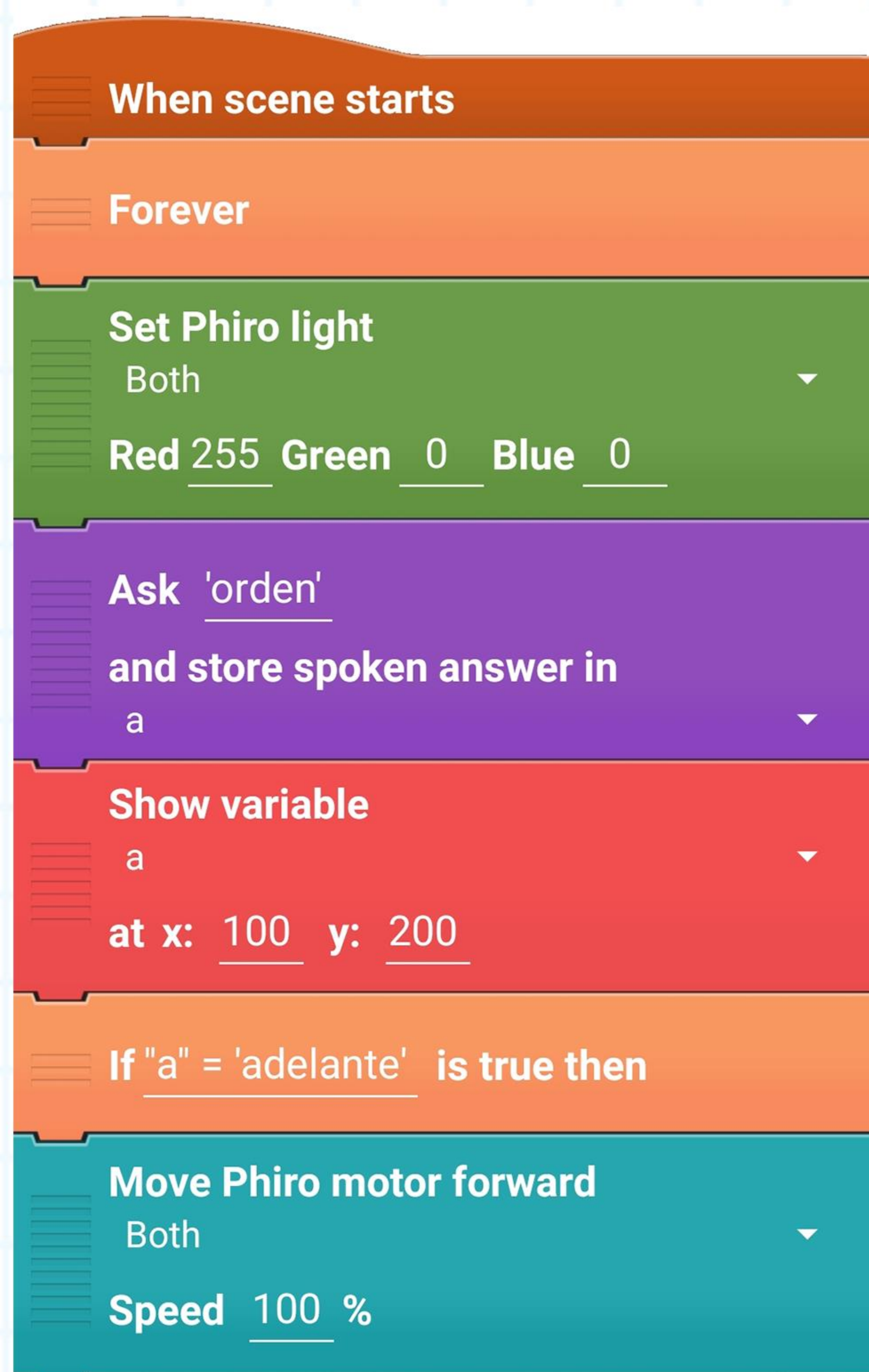
AI Novus - Starting with AI

AI Primus - Building foundations

AI Meritus - Transforming with AI

Students will learn to code with graphical programming blocks to discover & explore the elements of AI.

Elements of AI



Phiro Code App *

Speech Recognition – Spanish

* Students will learn 7 different coding platforms, of which Phiro Code is one of them.

1. IMAGE:

- a. Video Sensing
- b. Machine learning
- c. Image classifier
- d. Image recognition
- e. Get Image from URL
- f. Recognition of text in image
- g. Pose net | Skeletal
- h. Hand pose | Fingers

2. IMAGE | FACIAL FEATURE:

- a. Face detection
- b. Hair Colour detection
- c. Face mesh
- d. Face blocking recognition
- e. Emotion recognition
- f. Age recognition
- g. Gender recognition
- h. Head turn angle
- i. Glass wearing recognition

3. TEXT

- a. Language recognition
- b. Language Translation
- c. Machine learning
- d. Sentiment analysis
- e. Send web request to URL

4. SPEECH

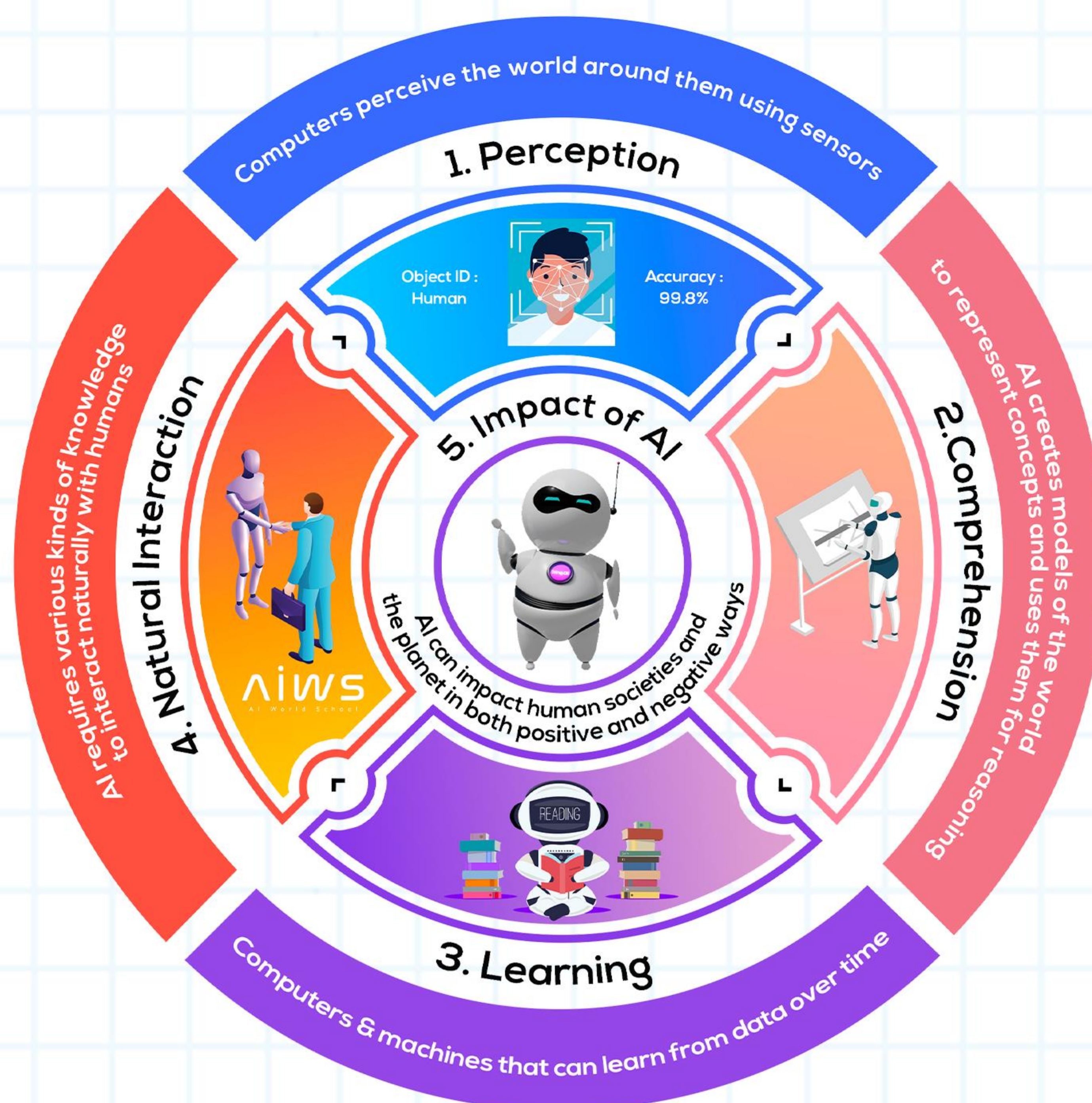
- a. Speech generation (Text to speech)
- b. Speech Recognition
- c. Voice recognition
- d. Regular expressions

5. NEURAL NETWORKS

C 5. What are some of the key learning outcomes ?

The AI course has been designed in three levels and each level covers following topics:

- A. Introduction to AI
- B. Perception in AI
- C. Introduction to Machine Learning
- D. Natural language interaction with AI
- E. Societal impact and AI ethics



A few examples of the AI education framework.

INTRODUCTION TO AI

- Define the terms AI in one's own words.
- Identify examples of AI in and around us in daily life.
- Interact with intelligent agents such as Alexa or Siri or Google Assistant.



PERCEPTION IN AI



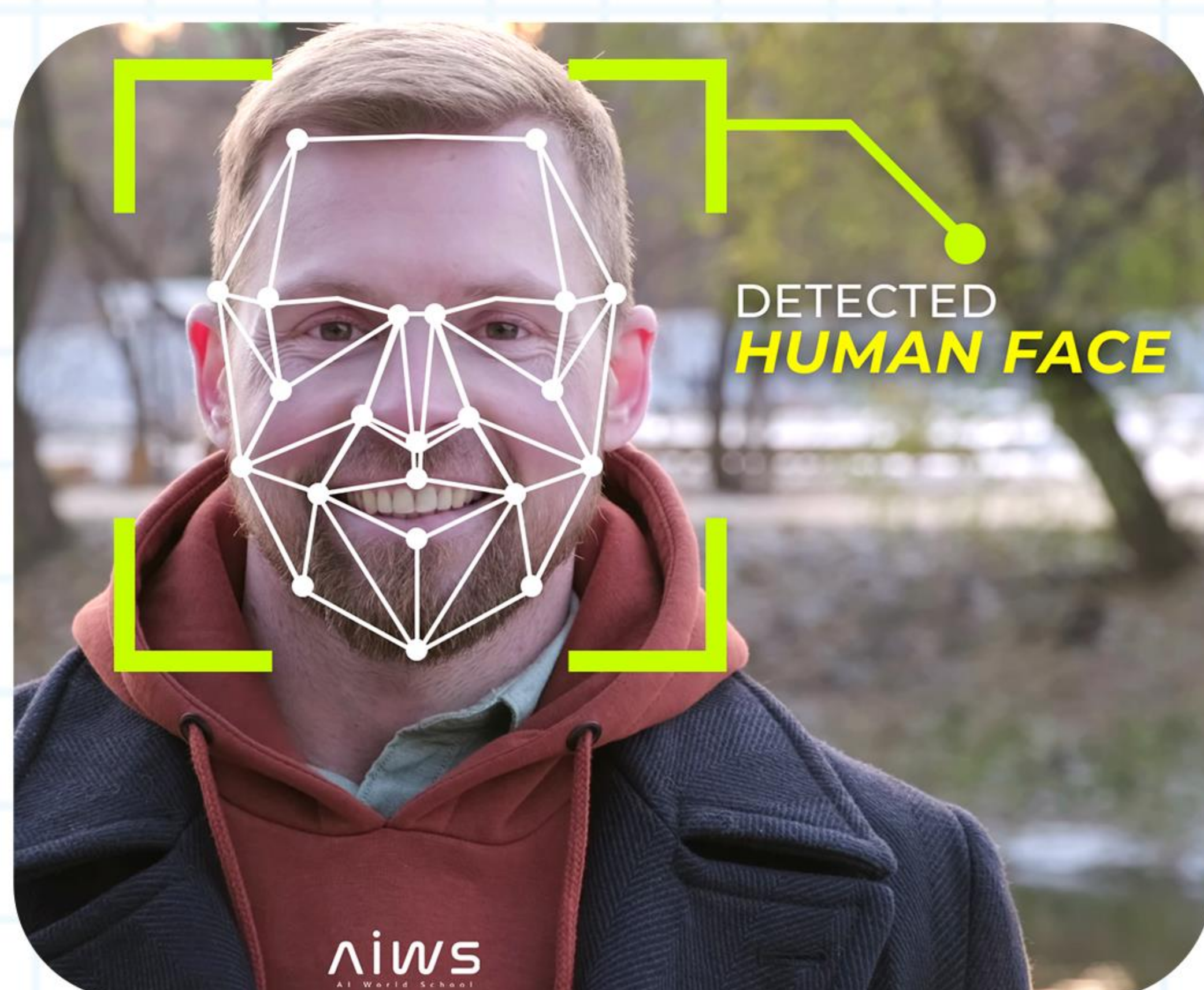
- Describe how machines use sensor inputs to perceive data.
- Demonstrate a limitation of computer perception.
- Build applications with perceptions with different levels of complexity.

NATURAL INTERACTION WITH AI



- Learn from patterns in data with “unplugged” activities.
- Discover how machines understand human language.
- Make "Conversational Agents" using NLP (Natural Language Processing) techniques.

INTRODUCTION TO MACHINE LEARNING



- Describe and compare the three different machine learning approaches: supervised, unsupervised and reinforcement learning.
- Modify an interactive machine learning project by training its model.
- Experiment with software that recognizes emotions in facial expressions.

SOCIETAL IMPACT AND AI ETHICS

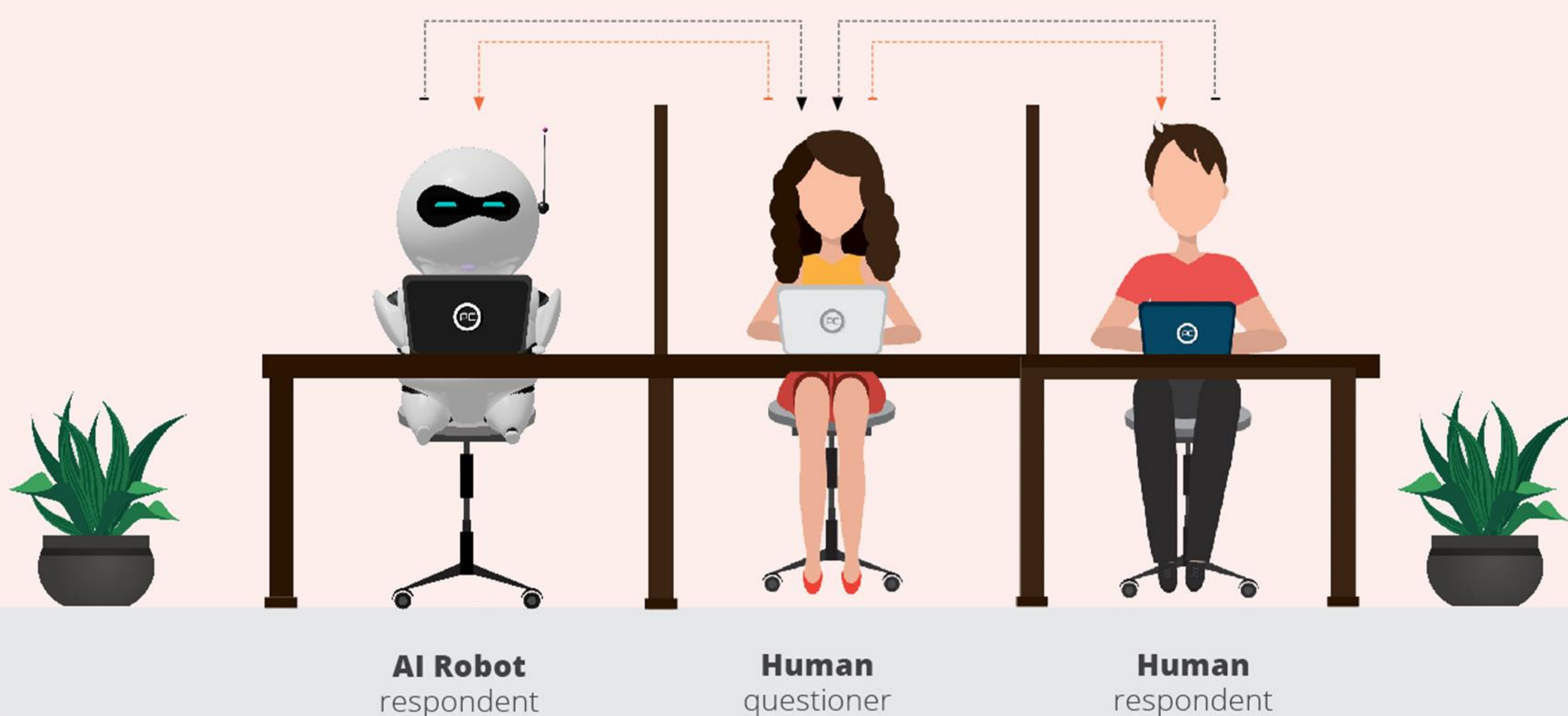
- Describe some tasks where AI outperforms humans, and tasks where it does not.
- Discuss whether common uses of AI technology are a good or bad thing.
- Explore how behavior is influenced by bias and how it affects decision making.
- Describe ways that AI systems can be designed for inclusivity.



What is Turing test ?

Imagine a game of three players having two humans and one AI robot,
The human questioner is isolated from other two players.
The human questioner's job is to try and figure out which of the 2 respondents is human and which is AI robot.

■ QUESTION TO RESPONDENTS ■ ANSWERS TO QUESTIONER



C 6. What are the coding courses offered ?

Why is coding useful for young people and children?

Learning to code empowers young people to develop as computational thinkers who can solve problems in a step-by-step fashion.



Javascript is the most popular & de facto language of the web. It is an easy & fun programming language to learn and a pretty useful skill to learn.

Python is a powerful yet easy to learn programming language. Learning Python is the first step to making your own AI code.



Digital Art : In this curated course, learners will create their own art creations using blocks of code. Learners can choose to code via mobile phone or laptop unleashing their creative skills.



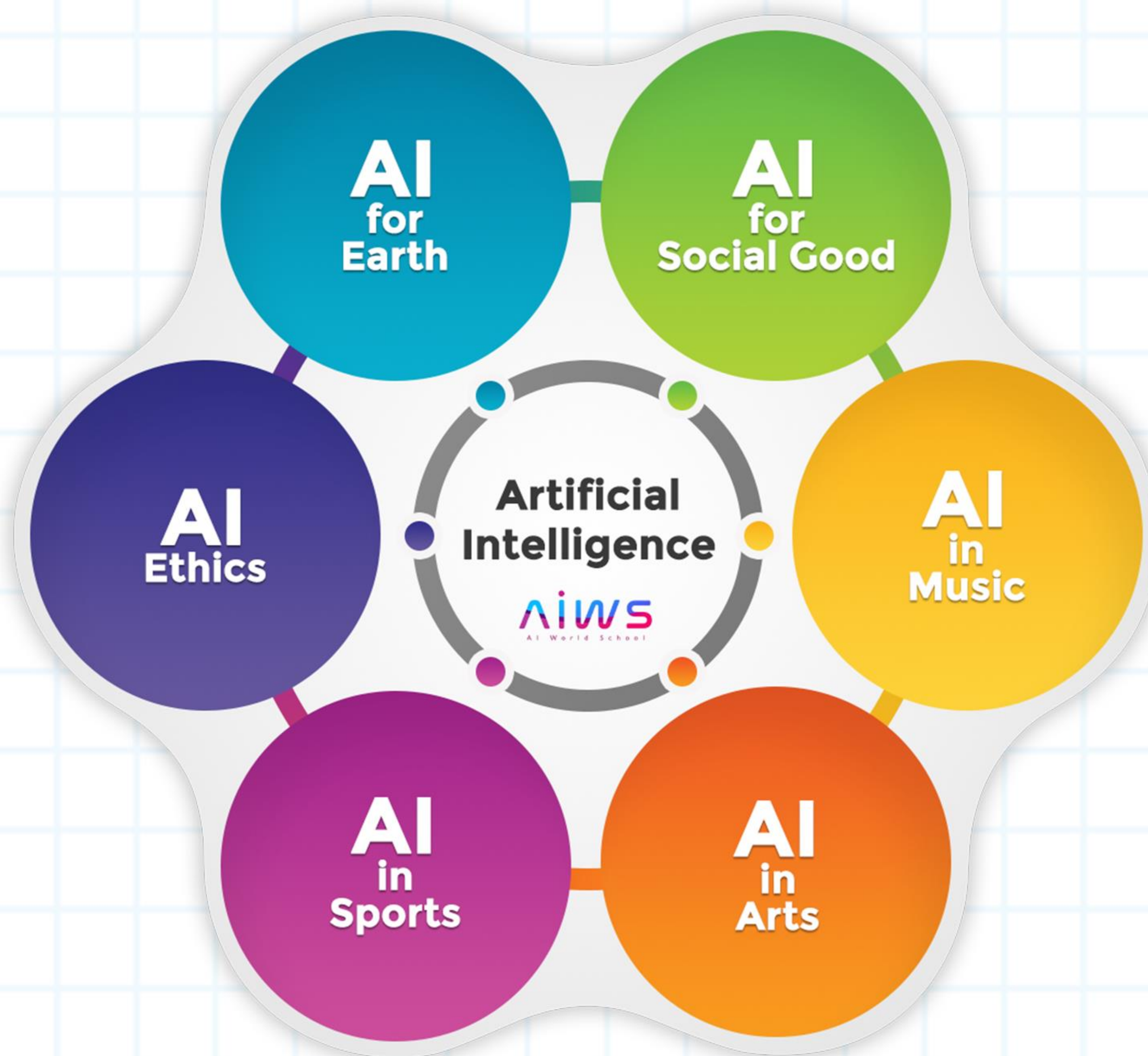
Digital Embroidery : In this course learners design innovative embroidery patterns with code and bring them to reality on their own. Learners can choose to code via mobile phone or laptop.

Computational Thinking for AI

Computational Thinking : The gamified learning CT-AI course helps young children develop CT skills from a very young age. Our goal is to help all learners become computational thinkers who can harness the power of computing to innovate and solve problems. CT is a cognitive 21st century skill which is an essential competency for students & learners of all ages. Among educators it's been called the "5th C" of 21st Century skills. Additionally it turns out that it is useful in a diverse number of subjects, from science to math to social studies.

C 7. Real world applications of AI

AI researchers around the world are harnessing the power of AI for a sustainable future. From solving the toughest environmental challenges to becoming the first line of defence in Healthcare to saving species & our forests from extinction and the list goes on endlessly.



At AI World School we will link our AI & coding courses to the practical applications of AI in order for learners to come up with their own solutions for a brighter tomorrow.

C 8. How to reach us ?



AI World School

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