

# Raising AI

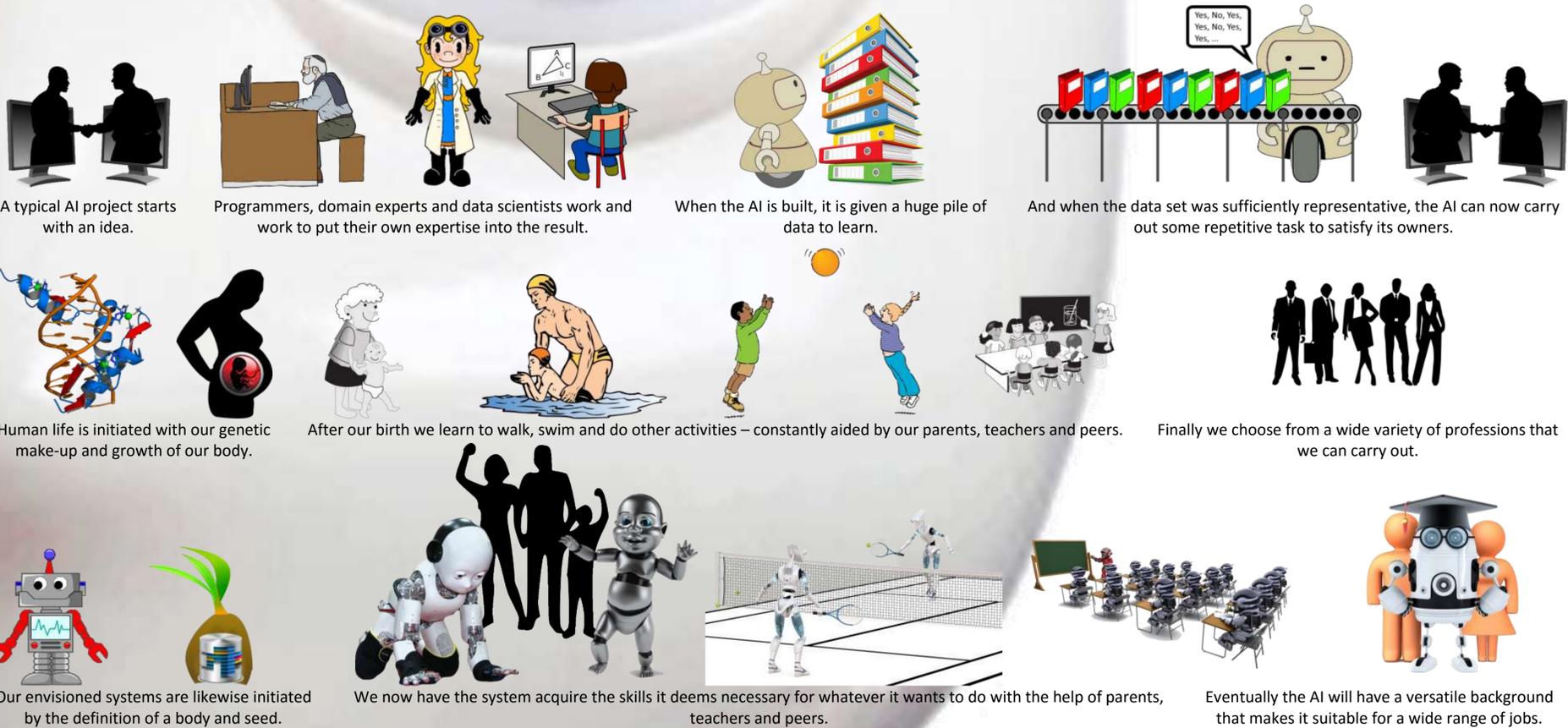
## From Minimal Seed to Artificial Adult

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### ABSTRACT

Humans and other animals are often touted as examples of systems that possess general intelligence. However, rarely if ever do they achieve high levels of intelligence and autonomy on their own: they are raised by parents and caregivers in a society with peers and seniors, who serve as teachers and examples. This poster describes our taxonomy for techniques that allow a tutor, parent or teacher to help a learner acquire the knowledge they need to perform a certain target task.



### TUTORING TECHNIQUES

#### HEURISTIC REWARDS

In many situations it can require a great deal of proficiency, time and/or luck to get relevant feedback about the utility of recent actions. A tutor can mitigate this problem by adding more feedback through real-time interaction with the learner.

#### SITUATION SELECTION

A tutor can facilitate the learning experience by helping their pupil focus on educational situations. This may be as simple as having them avoid too easy or too difficult situations, or as complex as seeking out qualities that complement the learner's current abilities.

#### DEMONSTRATION

Observing masters of the field is a common teaching technique in many disciplines. "Do as I do" is a great way to define complex tasks if the learner can map the tutor's world onto its own.

#### SIMPLICIFATION

Learning new complex tasks can strain the learner's working memory to a degree that learning is significantly impaired. This can be remedied if a simplified version of the task can be created.

#### TELEOPERATION

Sometimes it can be difficult to accurately describe an action, because it must simply be experienced by the learner. In these cases it can be educational if the tutor can temporarily take control of the learner's actions.

#### COOPERATION

Working directly together with the learner allows the tutor to employ other tutoring methods in parallel and with great flexibility.

#### DECOMPOSITION

Another way to reduce complexity is to let the learner focus on one thing at a time by decomposing a task into constituent parts that can be more easily learned separately. Afterwards the learned skills must be integrated to perform the target task.

#### COACHING

By providing direct instruction a coach combines two of the most powerful tools we have for learning: language and real-time feedback.

#### EXPLANATION

By using our complex language abilities and utilizing the learner's memory and understanding a learner can be prepared for a certain task offline. This allows us to prepare for unlikely events, and to engage in new activities without a tutor present.

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