Artificial Intelligence

A Learning Language based on Human Processes

Language requirements:

The host unit's program must be multi-tasking to allow for simultaneous multiple experiences and linked assessments, but single-tasking with regard to actions (or at least limited in its tasks) to avoid a deadly embrace (human suicide is caused by the inability to choose between two options). That is, input over-rides output at all times.

It must be able to simulate sleep to reconcile daily concepts.

Letters, words, and numbers should formulate *graphical* images cross-linked to experiences. These should also link to each other in progressive arrays:

- Individual (single) components
- Grouped components (combinations of individual components)
- Phrased components (linked groups)
- Syntax (sequencing) of components must be capable of changing the meaning of the whole

Conceptual Framework

Ability to examine the environment and itself
Ability to respond to the environment and itself
Ability to assess the environment and itself (that is, to assign values to its experience)

Fundamentals of Data Input and Processing

Data input should include visual (full spectrum), auditory and tactile (sensory). These are not only discreet functions for storing patterns; they should also constitute a combined pattern. The input received should be capable of being stored with associated values (see pattern assessment below).

Pattern Recognition: the ability to take snap-shots in time and make comparisons between successive snap-shots, and then make comparisons against known patterns. This should include language links as well as measurable data-input responses. We call it "understanding" or "perception." It must be able to define its own patterns as well as to use existing patterns.

Pattern Generation: the ability to articulate in patterns (language or otherwise) its perception of its world, both internal and external. We call it "speech."

Pattern Categorization: single input must be stored in multiple categories and associated with a loss-benefit analysis (see pattern assessment).

Example:
"Rain" can belong to these competing categories:

- beneficial: to crops, to cleaning, to fish
- detrimental: to electrical units, to clothing, to baseball games and wax finishes
- dangerous: if it is leads to a flood
- depressing: if sun is desired
- refreshing: if it removes the summer dust (and assuming dust is undesirable)

It can also be wet, liquid, soft, hard, straight, angled, puddled, soaked, light, heavy, etc.

We define the categories and then associate subsequent experiences with those categories, or we experience something new and determine which categories apply to it, or whether it needs a new category *(tasting Mexican food the first time)***.**

Pattern Assessment: assign values to experience by answering questions about whether it is subjectively good or bad, pleasurable or painful, does it help or hinder current goals, etc. This should mimic the left-hemisphere, right hemisphere dialogue in humans where an explanatory "story" is constructed to make sense of the input.

Pattern Abstraction: there needs to be an interpolation from known to unknown, that is, there needs to be a "belief" about the data received that progresses from tentative to conclusive.

- "Is it live or is it Memorex?", "Is it reality or just TV images?"
- "Is it fact or fiction? It was an impersonator, not the actual individual."
- "Is it believable or does it run contrary to past experience?"
- "Does it alter past experience? Rocky Road is still ice-cream, just a different flavor."

Pattern Abstraction involves maintaining an internal, modifiable category definition to help determine whether this experience matches or conflicts with a prior experience.

Example:
Ice cream is chewy but it can melt; it has the texture of cream on the tongue, the sweetness of sugar, the coldness of ice, the after-taste of milk and the flavor of "x." The flavor becomes the modifiable attribute for this particular category. Coldness is also a modifiable attribute. If ice-cream has melted and is now warm, it is merely "less desirable" for eating purposes. Its state has changed, but not its nature.

Pattern Responsiveness - the ability to develop its own if-then-else scenarios, to define its own "expectations," to test its environment, and to choose between available courses of action based on its pattern assessment.

Example:
An oncoming car has increasing size between snapshots which is used to calculate relative velocity and direction of travel. A car is known to be large and heavy. Large and heavy objects have the ability to crush. Crushing one's self is not desirable. Available options

include standing there, moving forward, moving left, moving right, moving back or jumping. Assessment of options based on past experience indicates moving forward is dumb, moving backward only delays the inevitable, and jumping is statistically less probable to be successful than moving left or right. Direction of travel is perpendicular, therefore left or right produces the same outcome unless there is an obstruction. Check for obstructions, pick the path without an obstruction. If obstructions block both paths, and there is no time to move around the obstructions, then jump using knowledge of trajectory and physics! If there is no knowledge of trajectory or physics, then try to outrun the car on a diagonal route using knowledge of Geometry! If there is no knowledge of Geometry, or no time to execute, then tuck and roll.

The unit must be able to re-assess, re-define, and re-categorize patterns based on new experience, and change its responses accordingly. This is the learning process in a nutshell.

Triggers and Inhibitors

There need to be motivational drivers to define "need" in the context of security and significance. Security is a primary category. It relates to the health of the host unit (damage or lack of it). Significance is the other primary category. It relates to its ability to meet comply with its short and long-range missions.

The hierarchical nature of these motivations is discussed later. The drivers are the tools that define or identify those experiences which contribute security and significance to the host, or those which threaten its security and significance.

- Seek the good for self
- Seek the good for others
- Seek the good for the abstract universe

- Seek to please self
- Seek to please others
- Seek to please God (the Law)

- Seek the least threatening to self
- Seek the least threatening for others
- Seek the least threatening for the abstract universe

These form a ***matrix*** of motivational drivers. Seeking the good for self may at the moment be found in pleasing others. Pleasing others may conflict with seeking the good for others. Others may be sequentially rated in importance to self: provider, family, friends, co-workers, acquaintances, authority figures, local strangers, and remote strangers.

Despite the sequencing of the relationships, there needs to be an over-riding level of need for each relationship that triggers a competitive response. In other words, there is a distinction between a *need* and a *desire*.

Examples:

- the *need* to remain functional over-rides the *request* to stick a metal part in an electrical outlet.

- the *need* to save a child in the street from an oncoming car over-rides the *need* to remain functional.

- the *need* to respond to a bleeding stranger over-rides the transient *desire* to respond to a question about the time of day from a healthy brother.

Defining Ongoing Goals and Missions

Current goals and purposes need to be contained in a plug-in module. Regardless of the current set of goals, there needs to be a perpetual review of competing permanent goals.

- Learning (data gathering and analysis) vs. Doing (completing goal-oriented tasks)
- Internal tasks (unit maintenance) vs. External tasks (service to others)

Learning is a perpetual goal, but it is only one goal. Its benefits are realized most often in the long-term and it is accomplished only by sacrificing time that could be spent completing current tasks. Multi-tasking may not be possible where learning is concerned especially when the resources necessary to the one are devoted to the other. There are self-centered goals competing with other-centered goals and both need satisfaction at some point.

Short term vs. Long-term Control Factors

All activities of the unit and the program must be filtered through a short and long term focus.

- *Assessment and meaning* may need to be delayed for some experiences so that other experiences can take priority in processing (one reason for the sleep mode is to process those items that were delayed during waking hours).
- *Goals and purposes* are likewise split between those with immediate impact and those with less priority.
- *Distractions* are defined as immediate or delayed (i.e. each is assigned an importance value). A fire alarm is an immediate distraction (very important) while ball-game scores may be delayed for processing (not as important).

- *Memory allocation* is based on this importance value, and on whether the importance is short-term or long-term. A fire-alarm is a short-term memory request and may be "forgotten" for purposes of date and time of the event, but it is a long-term memory request as far as its meaning is concerned.

Such goals are normally based on threat-benefit factors (see triggers and inhibitors) with threat over-riding benefit in the short-term. There must also be cost-benefit inhibitors to decide how long to devote to a task, or whether to take the time to learn something new. Active over-rides static when there is a choice between doing something and doing nothing. "Ambition" over-rides Energy conservation. Motion is always a potential threat and it therefore always takes priority over non-moving objects for assessment purposes.

In determining threat-benefit or cost-benefit, there needs to be a parent-child relationship between the experience and the goals which controls the relative importance of the experience, and a hierarchical approach to control the response to that experience. The categories of self, others, universe and God are parent-child in the sense that all of the attributes of "self" are passed onto the experience when the goal primarily impacts the self category. Controlling the level of motivation is based on responses to and from those relationships, and on the impact of the experience on those relationships. If an experience seems important to the unit based on its goals, but the experience appears to have no importance to others, the motivation level is decreased. A task may need to be self-motivated because it will not find support in the unit's environment. An IRS unit would need to pursue its goal of revenue collection even though the unit faces rejection by the person being audited.

The program must therefore be able to define the meaning of an experience within the context of its goals, determine whether responding to it is a distraction or in line with its goals, and determine whether it needs to store the experience for future reference or discard it as duplicative or unmeaningful.

In this sense, deciding whether to take time to learn a new skill or obtain a new experience and then assessing how long to devote to that task before returning to a competing task must be part of the overall assessment activity. It always assesses experience and responses against the goals. Learning is always a goal, but it doesn't always carry a high enough priority to over-ride an urgent task.

Memory Allocation and Retrieval

Resources are always limited. The more that is learned, the slower the response time while that data is accessed for reference during future experiences. Therefore not everything needs to be instantly retrievable. Some retrieval is instant, some delayed and some must be restored from archives. Archival information is always stored with its access links, but those links are disengaged from the access engine to improve response time for more urgent matters. The unit determines its own storage requirements based on its current goals.

Emotional Responses

The unit should not only deal with pleasure and pain to itself, but also dispensing pleasure and pain to its environment. Humor and Anger are necessary components to Pattern Generation. Humor is necessary to consensus building when teamwork is a goal. Anger is necessary to display how serious an issue is at stake. Anger can be programmed using insult, epithet and tantrum. Humor can be programmed using "safe" threats, those things which have the potential for danger but in the context of the circumstances, actually pose no threat (the roller-coaster effect). Other behavioral patterns are also necessary components to attaining goals and objectives. These include lying (saying no Jews are at home when questioned by Nazi police), honor, respect and obedience based on the utility of displaying such behaviors.

The impact a unit has on its environment should be tied to pleasure and pain tables. A negative impact on its environment should lead to a sense of rejection and failure (shame) - the goal of meeting the needs of others is unmet. It may nonetheless be necessary to accept this failure because a larger goal was satisfied. This leads to self-sacrifice which in itself may overcome the shame because it is a desirable trait to develop - as long as it doesn't lead to self-destruction.

Implementation of Emotional responses

Shame can be physically represented in the unit as a loss of power effected by a rheostat.
Joy can be represented by an increase power, or the number of computations per second.
Anger can be an increase in power but a decrease in computations.
Fear can restrict the unit's processing to survival routines.
Love can increase power, decrease computations, and restrict the survival routines.