Adaptive resonance theory: ART

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Terminology

- Short-term memory (STM)
- Long-term memory (LTM)
- Attentional subsystem
- Orienting subsystem
Mechanism

- Orchestrate the search for template matches
- Determine what constitutes a template mismatch
Sequence of events

- The $F_2$ node that responds most strongly to the input $I$ is active while all others are inactive.
- The $F_1$ gain control allows the input to be transmitted to $F_2$ under the 2/3 rule. The orienting subsystem is not active.
- If a match occurs then resonance takes place, otherwise $F_2$ is reset and new template is read out.
The ART family

- ART1
- ART2
- ARTMAP
- ART3
Applications

• Boeing – classification of parts (ART)
• Classification of black-and-white printer characters (ARTMAP)
• Modelling of brain function