Erratum for
"AI Application Programming"
November 23, 2003

If you believe you have found an error, or would like to discuss the book or this erratum, please contact the author at `mtj@mtjones.com`.

Erratum for the First Printing

Chapter 1 – History of AI

Page 3, the end of the second paragraph should read, "compute World War <u>II</u> ballistic firing tables." [error noted in underline]

Chapter 3 – Introduction to Adaptive Resonance Theory (ART1)

Page 37, Figure 3.2, the top of the figure should read:

$$P_i \cap E \qquad \text{Vector bitwise AND}$$

Page 39, Equation 3.3 should read:

$$\frac{\|P_i \cap E\|}{\|E\|} > \rho$$

Chapter 4 – Ant Algorithms

In Listing 4.4 on page 71, remove the text segment from the comment near the end of the source that reads:

    <au: Should this be tabu? Yes>

so that it reads:

    /* Load the ant's current city into tabu */

On page 63, at the bottom, the line should read:

    "$\underline{\eta(r,u)}$ is a heuristic function…"

Chapter 5 – Introduction to Neural Networks and Backpropagation

In Listing 5.2 on page 103, the line that reads:

```
#define getRand(x)        (int)((x) * getSRand())
```

should instead read:

```
#define getRand(x)        (int)((float)x*rand()/(RAND_MAX+1.0))
```

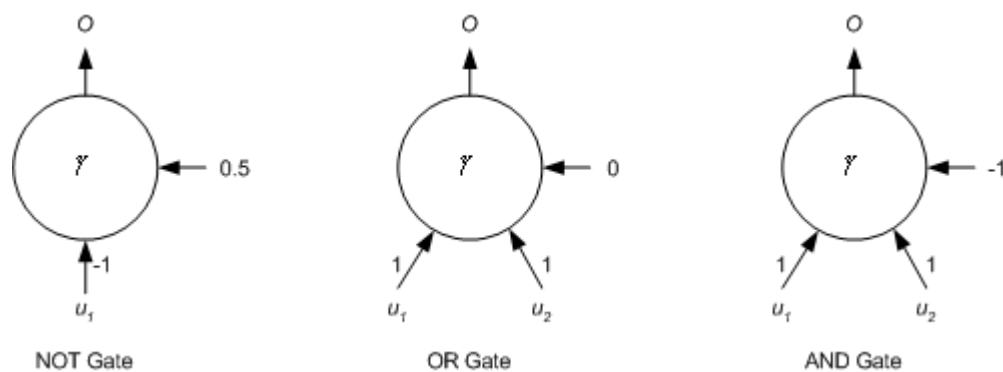The NOT and OR single layer perceptrons in figure 5.3 are incorrect. The correct figure is shown below.

Figure 5.3 Logic gates built from single layer perceptrons.

Chapter 7 – Artificial Life

In Listing 7.4 on page 166, the line that reads:

```
#define getRand(x)        (int)((x) * getSRand())
```

should instead read:

```
#define getRand(x)        (int)((float)x*rand()/(RAND_MAX+1.0))
```

Chapter 11 – Agent-Based Software

In Listing 11.17, (near the top of readGroupStatus), where the line reads:

```
fp = fopen(GRPSTS_FILE, "r");
```

should read instead (second line added):

```
fp = fopen(GRPSTS_FILE, "r");
if (fp == NULL) return;
```

Chapter 12 – AI Today

The last sentence of the third paragraph under "AI and Scientific Discovery" should read "While rediscovery may not add to new knowledge, it does illustrate that computers can discover complex theories and shows hope for future discovery." [error noted in underline]

Random Function

The getRand macro can erroneously return an incorrect value (with very low probability) due to a bug. The macro that reads:

```
#define getRand(x)      (int)((x) * getSRand())
```

should be changed to read:

```
#define getRand(x)      (int)((float)x*rand()/(RAND_MAX+1.0))
```

This bug appears on the CD-ROM in chapters 2, 4, 5, 6, 7, 9 and 10.

Erratum for the First and Second Printing

Chapter 3 – Introduction to Adaptive Resonance Theory (ART1)

Page 39, Equation 3.3 should read:

$$\frac{\|P_i \cap E\|}{\|E\|} >= \rho$$

The source `rcmnd.c` should also be updated to reflect this. In the function `performART1`, the line that reads:

```
If (result < test) {
```

Should instead read:

```
If (result > test) {
```

Function performART1 should also have the line that reads:

```
If (((float)magPE/(float)magE) < vigilance) {
```

Changed to:

```
If (((float)magPE/(float)magE) >= vigilance) {
```

The sentence immediately preceding Equation 3.3 should read instead:

If the vigilance parameter is set high enough (1.0), the feature vectors must match the prototype vectors for acceptance.

The vigilance parameter in the code should also be set to minimize the number of clusters, as:

```
const float vigilance = 0.1;        /* 0 <= vigilance <= 1 */
```

[Thanks to Charles Neuman for locating this issue.]

Chapter 9 – Fuzzy Logic

In Listing 9.4, the two of the three temperature membership functions were voltage instead of temperature. The listing should include `m_temp_hot` and `m_temp_warm` (instead of `m_voltage_low` and `m_voltage_medium`):

Listing 9.4 Temperature Membership Functions

```
fuzzyType m_temp_hot( float temp )
{
  const float lo = 35.0;
  const float lo_plat = 45.0;
  const float hi_plat = 45.0;
  const float hi = 45.0;

  if (temp < lo) return 0.0;
  if (temp > hi) return 1.0;

  return plateauProfile( temp, lo, lo_plat, hi_plat, hi );
}

fuzzyType m_temp_warm( float temp )
{
  const float lo = 15.0;
  const float lo_plat = 25.0;
  const float hi_plat = 35.0;
  const float hi = 45.0;

  if ((temp < lo) || (temp > hi)) return 0.0;

  return plateauProfile( temp, lo, lo_plat, hi_plat, hi );
}
```

[Thanks to Tom Copeland for finding this issue.]