Corrections to *Foundations Of Fuzzy Control*, Wiley, 2007

Jan Jantzen, 31 May 2012

Page 5 Two lines under Eq. (1.3): 'Therefore K_p must be negative' should be 'Therefore F must be negative'.

Page 33 Many errors in the rightmost table of (2.10). Replace the contents of the rightmost table by

1	0	0	0	0
0	1	u	u	u
0	u	1	0.5	0.5
0	u	0.5	1	v
0	u	0.5	v	1

Page 34 Six errors in Table 2.1, third column $(p \Rightarrow q)$. Replace the column by

$$\begin{bmatrix} 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 & 1 & 0 & u & 1 & 1 & 1 & 0 & u & 0.5 & 1 & 1 & 0 & u & 0.5 & v & 1 \end{bmatrix}^T$$

Page 36 A serious error two lines from the top. Modus ponens is

$$[p \wedge (p \Rightarrow q)] \Rightarrow q$$

The rightmost symbol must be q.

Page 40 Wrong index two lines from the heading **Several rules**. Rule number 1 should say $\mathcal{B}_1$ on the right hand side of the rule, in accordance with the general format for rule i three lines below the block of rules.

Page 41 Lower third. The symbol ∇ was not printed in 12 places, leaving a blank. The text should read: For disjunction, a t-conorm is an operation ∇ satisfying

$$\begin{aligned}
0\nabla x &= x \\
x\nabla y &= y\nabla x \\
x\nabla (y\nabla z) &= (x\nabla y)\nabla z \\
\text{If } w &\leq x \text{ and } y \leq z \text{ then } w\nabla y \leq x\nabla z
\end{aligned}$$

Then please correct an error in the following expression for the conorm: A t-conorm ∇ can be generated from a t-norm Δ, using De Morgan's law:

$$\begin{aligned}
\neg (x\nabla y) &= \neg x\Delta\neg y \Rightarrow \\
1 - (x\nabla y) &= (1 - x)\Delta (1 - y) \Rightarrow \\
(x\nabla y) &= 1 - (1 - x)\Delta (1 - y)
\end{aligned}$$

Page 58 The arguments controlling μ_{Pos}, four lines below the figure, should be

$$\mu_{Pos} = \mu_{STrapezoid}(x; 0, 60.100, 100)$$

Page 66 Top of the page. The block of seven definitions, or shorthand notation rather, contains meaningless repetitions of μ_{Neg} and μ_{Pos}. The second and third line should be

Z_E for $\mu_{Zero}(E)$ corresponding to 'error is Zero'

P_E for $\mu_{Pos}(E)$ corresponding to 'error is Pos'

The fifth and the sixth line should likewise be corrected to

Z_{CE} for $\mu_{Zero}(CE)$ corresponding to 'change in error is Zero'

P_{CE} for $\mu_{Pos}(CE)$ corresponding to 'change in error is Pos'

Page 95 Middle of the page. The introductory comments about stability are not generally true, but only true for the (circular) motion in the coordinate system spanned by the eigenvectors. Disregard the section around Eq. (5.6) for now; there is a lot more to say about this topic, perhaps in a later edition.

Page 174 Three lines above the heading 8.2 Mathematical Model. A more precise description of the approximation of the motor is: *(...) we assume that the armature voltage is proportional to the current, and since the torque is proportional to the current, the torque is assumed proportional to armature voltage.*

Page 188 The line above the heading Nonlinear equations. The range of w is too small; please correct to: *(...) and w should be in the range $1 < w < 5$ to minimize the IAE performance index.*