Exercises for
Computational Intelligence
Winter Term 2007
Sheet 8

Task 8.1 (30 Points)
Implement a simple fuzzy system for the example „crash prevention”.

1. Define appropriate linguistic variables „speed“, „distance“ (to the obstacle), and „force“ (applied to the brakes).

2. Define an appropriate fuzzy rule base (i.e. a set of IF-THEN-rules that you find sufficient).

3. Instantiate your system using (1) a Mamdani fuzzy controller and (2) a „logic-based“ controller using operators based on the same $t$-norm (in particular, $\phi_t$ for inference) with $t \in \{t_m, t_L, t_p\}$.

4. Fix some rather large initial distance and test your systems with some small, medium, and large crisp value for speed.