

Fuzz-C™

Fuzzy Logic Preprocessor for C



Fuzz-C™ is a stand-alone preprocessor that seamlessly integrates fuzzy logic into the C language. Now you can add fuzzy logic to your applications without expensive, specialized hardware or software. Fuzz-C accepts fuzzy logic rules, membership functions and consequence functions, and produces C source code that can be compiled by most C compilers, including the Byte Craft Limited Code Development System.

The preprocessor generates C code that is both compact and significantly faster than most current fuzzy logic commercial implementations—all with your favorite C compiler.

Fuzz-C provides a practical, unified solution for applications that require fuzzy logic control systems. Use your existing C libraries for program management, keyboard handlers and display functions without change; you can implement system control functions using fuzzy rules.

Fuzz-C is a flexible system that allows all data types supported by your C compiler. Standard defuzzification methods, such as *center of gravity*, *max left*, *max right*, and *max average*, are provided in source form. Fuzz-C lets you easily add new defuzzification methods.

www.bytecraft.com

```
/* Fuzzy Logic Climate Controller
```

```
This single page of code creates a fully Functional controller for a simple air conditioning system */
```

```
#define thermostat PORTA  
#define airCon PORTB.7
```

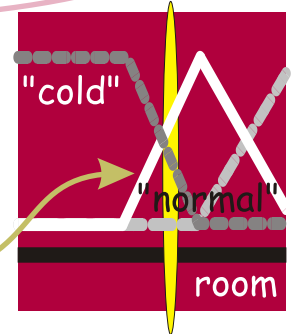
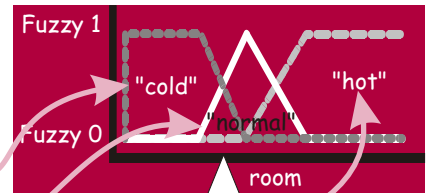
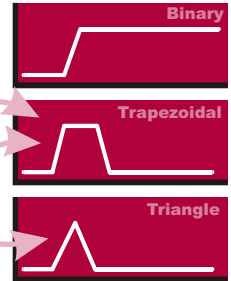
```
/* degrees celsius */  
LINGUISTIC room TYPE int MIN 0 MAX 50  
{  
    MEMBER cold { 0, 0, 15, 20 }  
    MEMBER normal { 20, 23, 25 }  
    MEMBER hot { 25, 30, 50, 50 }  
}
```

```
/* A.C on or off */  
CONSEQUENCE ac TYPE int DEFUZZ CG  
{  
    MEMBER ON { 1 }  
    MEMBER OFF { 0 }  
}
```

```
/* Rules to follow */  
FUZZY climateControl  
{  
    IF room IS cold THEN  
        ac IS OFF  
    IF room IS normal THEN  
        ac IS OFF  
    IF room IS hot THEN  
        ac IS ON  
}
```

```
int main(void)  
{  
    while(1)  
    {  
        /* find the temperature */  
        room = thermostat;  
        /* apply the rules */  
        climateControl();  
        /* switch the A.C. */  
        airCon = ac;  
        wait(10);  
    }  
}
```

Membership Functions



Center of Gravity Calculation

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Fuzz-C™ includes one year technical support via phone or email. Fuzz-C requires modest system resources: DOS or Windows and less than 1 megabyte of memory. Fuzz-C works with *make* and other industry-standard build systems. Complete documentation is included.