Calling Fortran Functions

- What if you can't find a library routine in C, but you can find one in Fortran?
- You can call Fortran code from C.
- Fortran functions must be declared and called with a trailing underscore
- You must include the fortran libraries (see page 4)
- All arguments must be passed as pointers
- All matrices must be transposed

IMSL

- One large set of library routines is IMSL
- Look at the manuals for syntax
- Functions are complicated because they are general
- Also complicated because they are written to save memory

To run on ACPUB, you need to type the following at the shell prompt, or add it to your `.cshrc`

```
setenv LM_LICENSE_FILE "/usr/pkg/matlab/etc/license.dat"
```

`ttest.c, linreg.c`

Other Libraries

- BLAS — Basic Linear Algebra Subroutines
- LAPACK —- Linear Algebra Package
- other things also available at `www.netlib.org`

`eigen.c`

Including Libraries

To link in the IMSL libraries:

ISDS alpha `gcc -O2 -o ttest.exe ttest.c -limsl -lfor -lUfor -lm`

ACPUB `gcc -O2 -o linreg.exe linreg.c -L/usr/local/lib/`

`-lsocket -lnsl -limsl -L/usr/pkg/spro/sun4m_55/lib/`

`-lF77 -lM77 -lsunmath -lm`

To link in the BLAS and LAPACK libraries:

ISDS alpha `gcc -O2 -o eigen.exe eigen.c -lapack -lblas`

`-lfor -lUfor -lm`

ISDS BSD `gcc -O2 -o eigen.exe eigen.c -L/usr/local/lib`

`-lblas -llapack -lg2c -lm`

ACPUB `gcc -O2 -o eigen.exe eigen.c`

`-L/afs/acpub.duke.edu/pkg/spro-4.01/sun4m_5x/SC4.0/lib/`

`-L/usr/local/lib/ -lsocket -lnsl -llapack -lblas -lF77`

`-lM77 -lsunmath -lm`