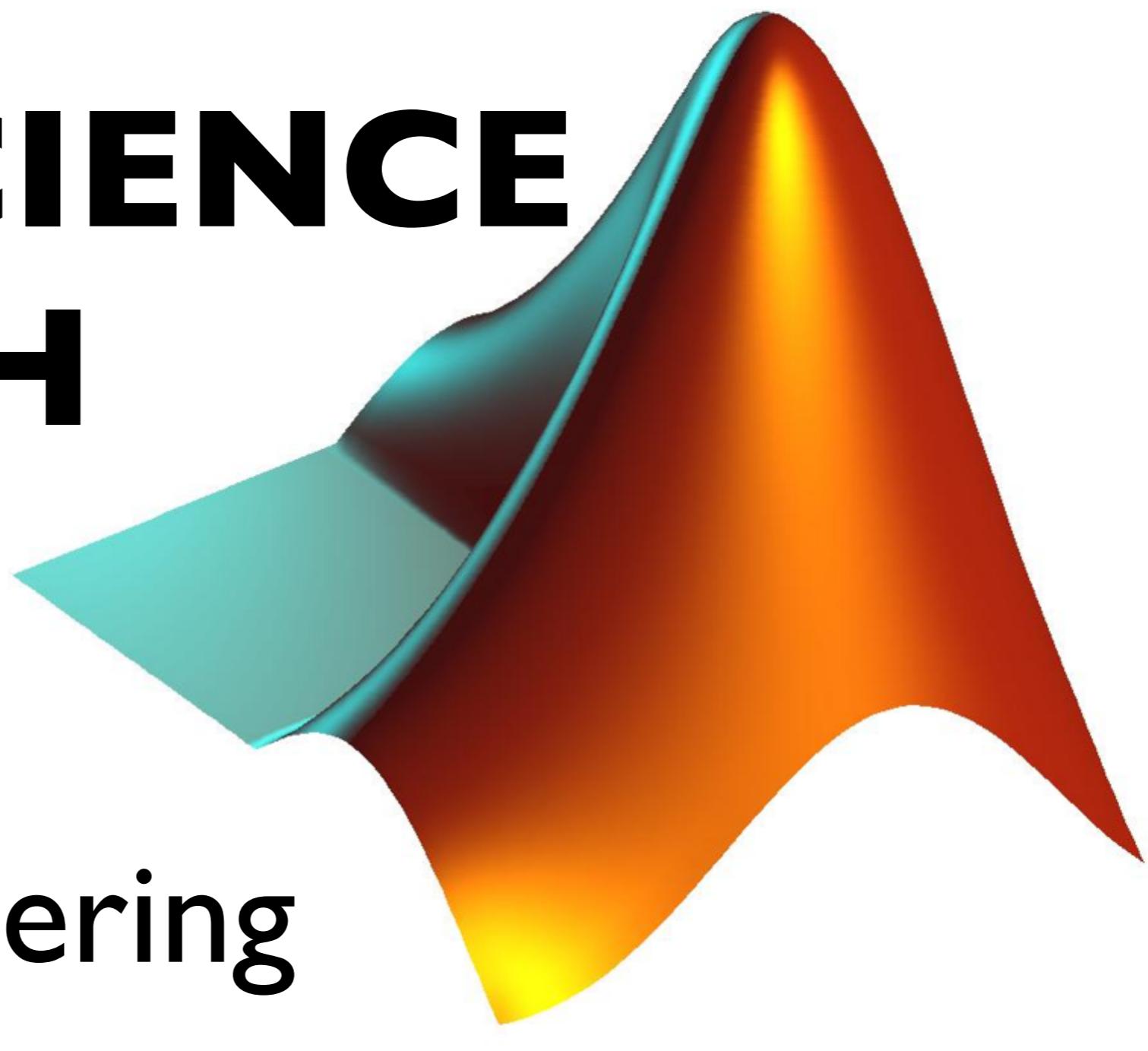


FUNDAMENTALS OF MATLAB FOR NEUROSCIENCE RESEARCH



Dr. Brian J. Spiering

Agenda

★ Strategies

★ Tactics

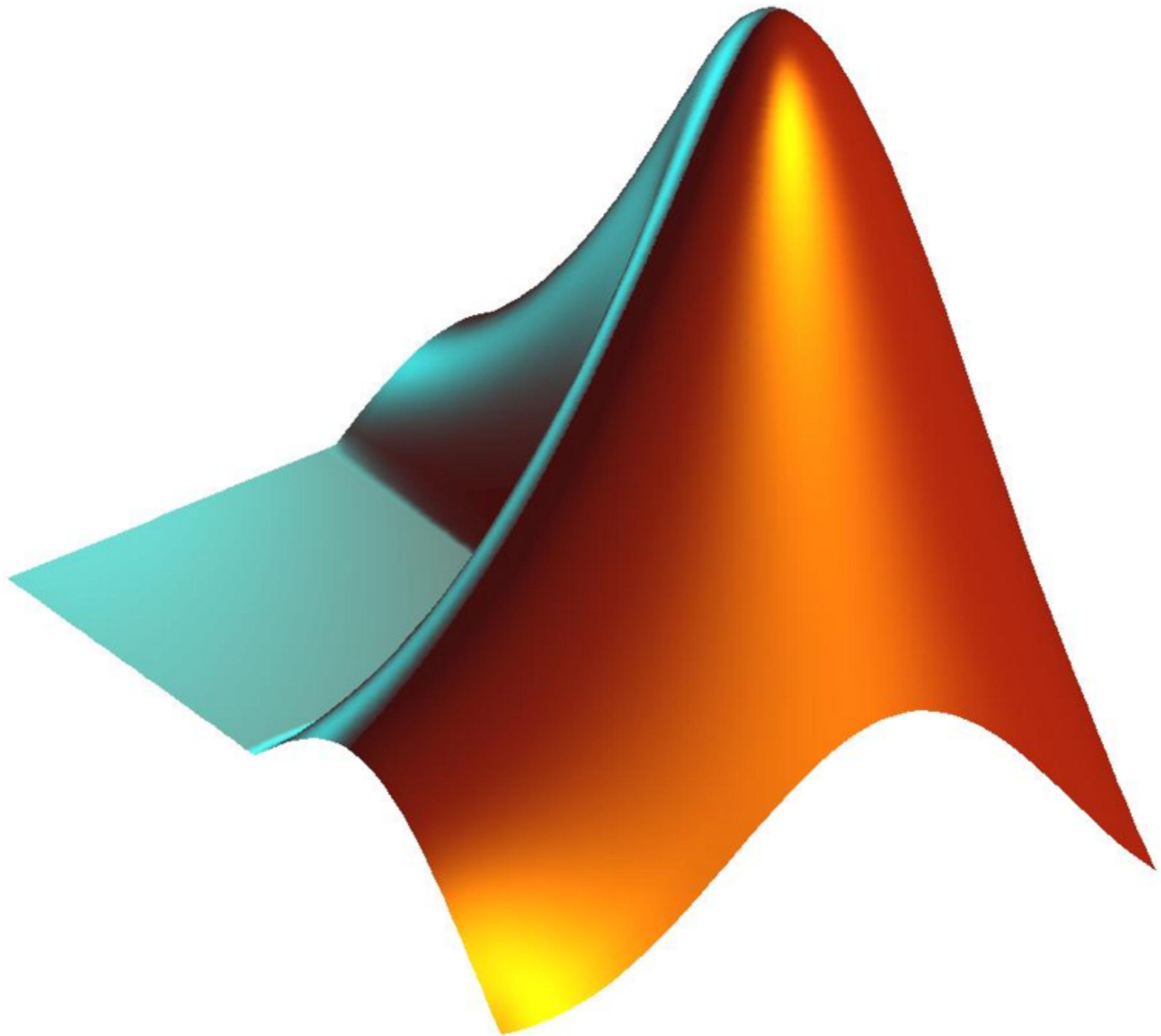
★ Tips & Tricks

Your job

is to define

Your job

Your job is to
pick problems
worth solving



Conducting research in MATLAB:



Current state of conducting research:



The future of conducting research:







Programming Best Practices

Dreyfus Model of Skill Acquisition

- 1) Novice
- 2) Advanced beginner
- 3) Competent
- 4) Proficient
- 5) Expert

NOVICE

- Best served by being told what to do
- Follow a manual
- No possible decisions

ADVANCED BEGINNER

- Best served by a bit of freedom
- But unable to quickly describe a hierarchy of which parts are more important than others.

COMPETENT

- Best served by the choosing among activities
- Has the ability to make plans and create routines

PROFICIENT

- The more freedom offered & the more expected, the more output generated

EXPERT

- Writes the manual, doesn't follow it
- Creates novel solutions to problems worth solving

HAVE A GOAL



HAVE A PLAN



D.

R.

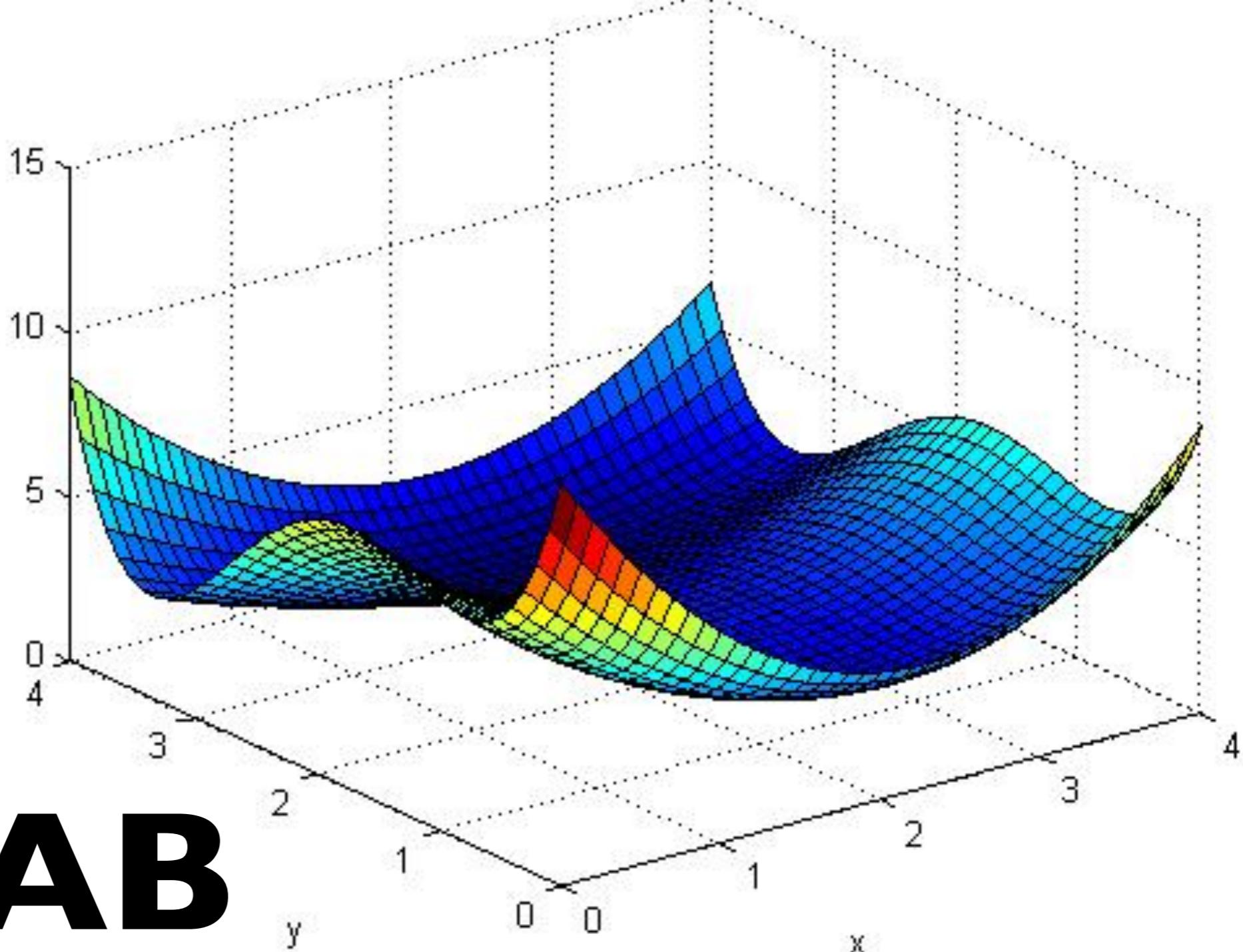
A large, bold, black and white graphic logo. It features a stylized letter 'Y' composed of two thick, black, downward-sloping bars that meet at a single point at the top. To the right of the 'Y', there is a solid black vertical bar that tapers slightly at the bottom. A small, solid white circle is positioned at the bottom right corner where the black bar meets the white background.

ALWAYS BE SCRIPTING





shift



MATLAB BEST PRACTICES



THINK IN MATRICES

LIFE'S TOO SHORT FOR “FOR LOOPS”

```
for a=1:nb
    for b=1:nb
        for c=1:nb
            for d=1:nb
                p2hf(a,b,c,d) = 2*p1hf(a,b)*p1hf(c,d) -
                    p1hf(a,c)*p1hf(b,d);
            end
        end
    end
end
```



STYLE IS IMPORTANT

