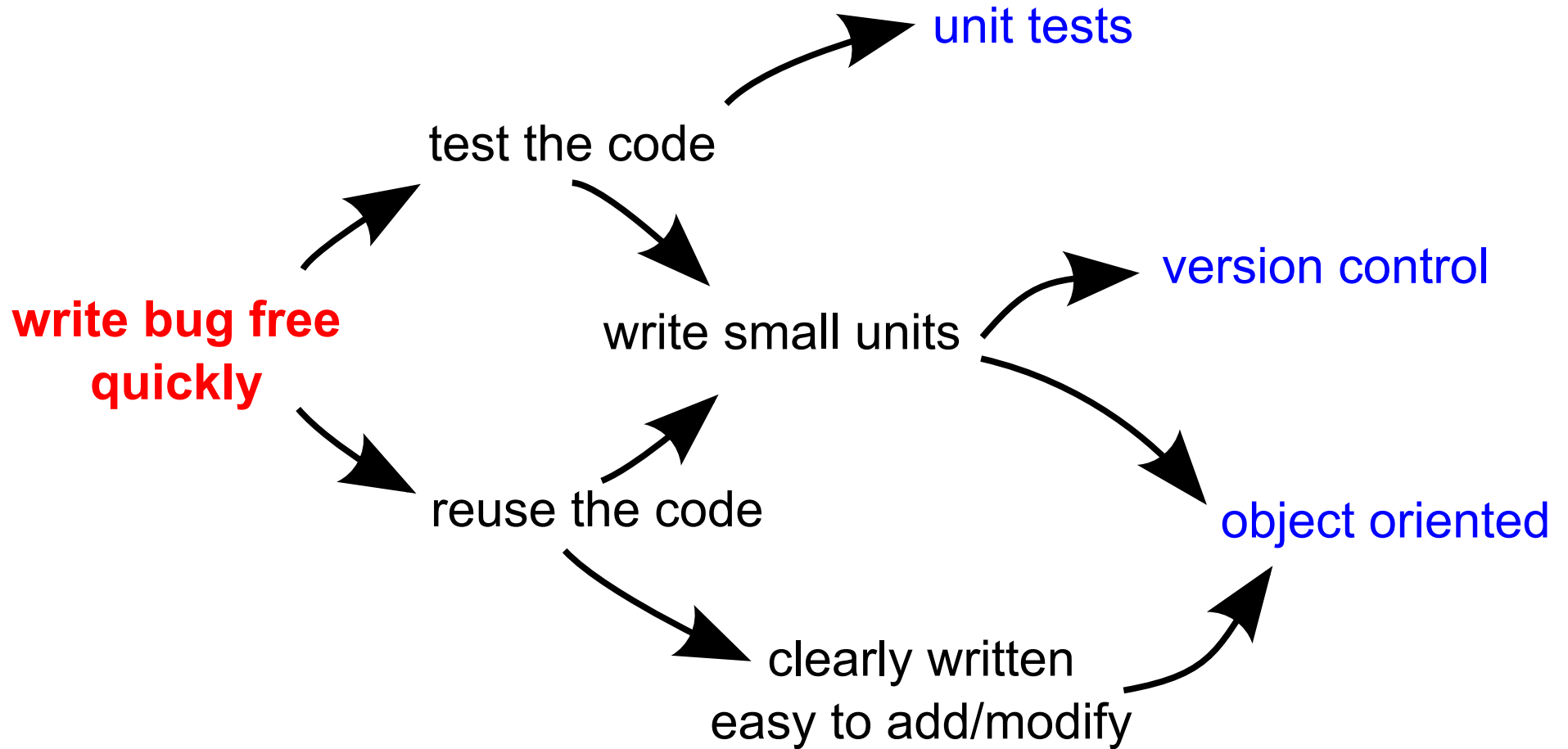


Object oriented programming in matlab

Richard E. Turner (rt60@nyu.edu)

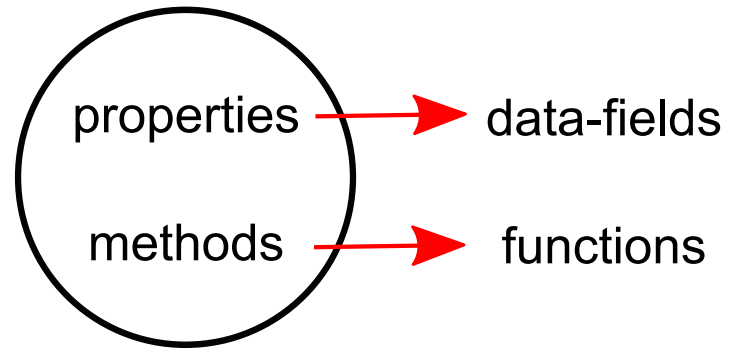
November 29th, 2011

Our goals in life...

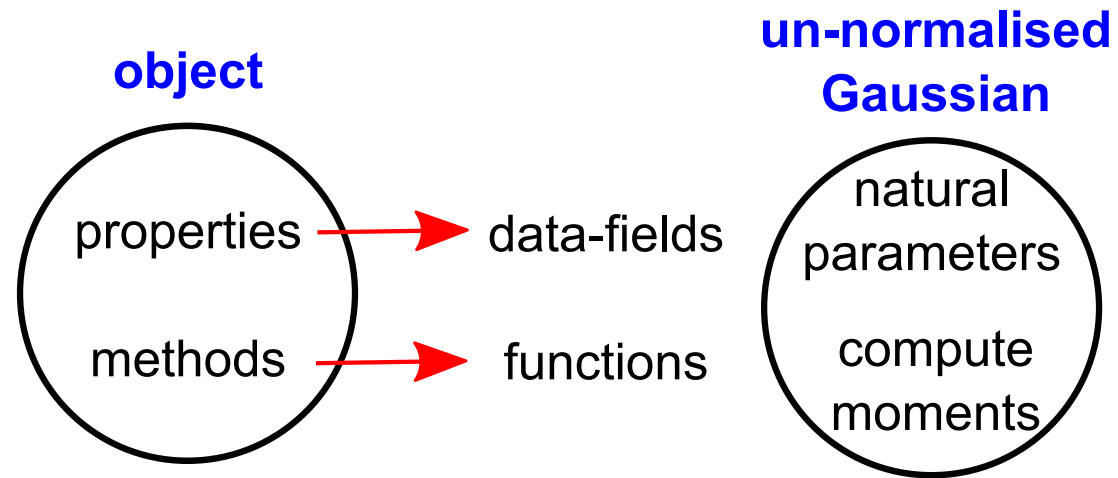


Jargon

object

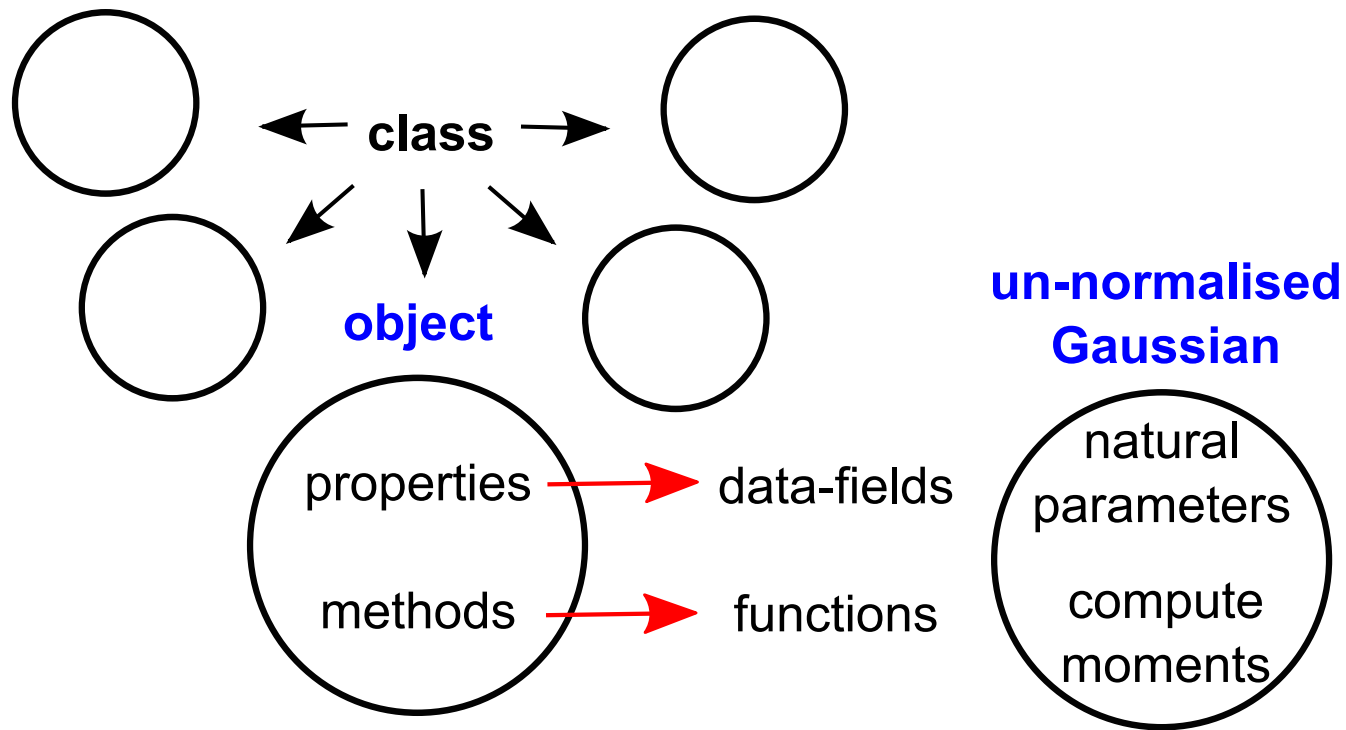


Jargon



Matlab simile: like a structure with pre-defined, fixed fields

Jargon

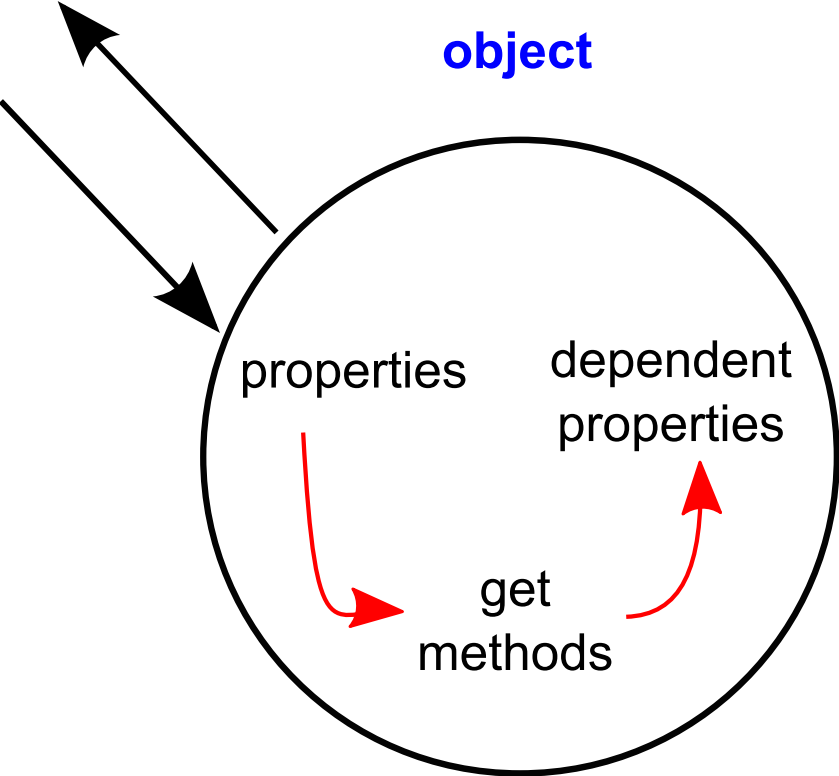


Matlab simile: like a structure with pre-defined, fixed fields

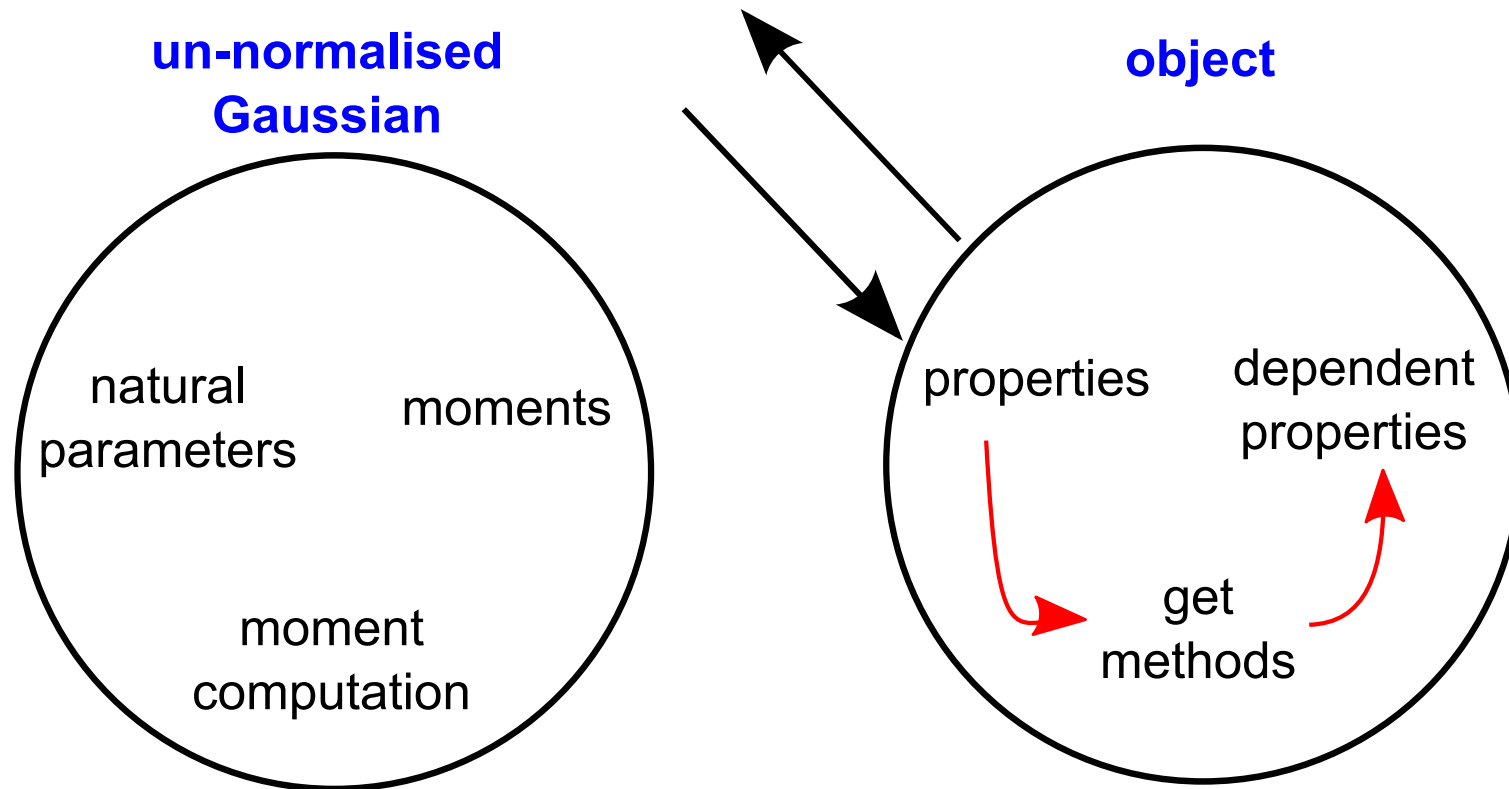
Object oriented approach

- **Organises** data and functions which belong together
- **Abstracts** so others can operate at the level of the objects (programming = creating abstractions)
- **Data-forward thinking** (rather than code forward) you think about the data *first*.
- OO makes simpler programs more complicated, but complex ones more simple.
Beware too much/forced abstraction.
- There is an **overhead**

How does it do this: Encapsulation and property access

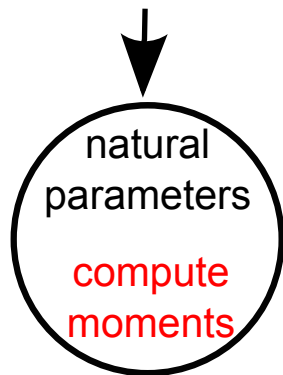


How does it do this: Encapsulation and property access

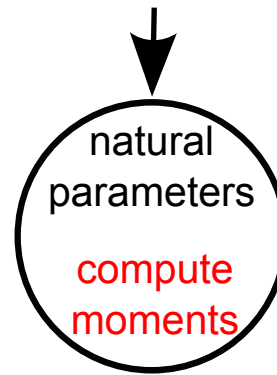


How does it do this: Inheritance and dynamic dispatch

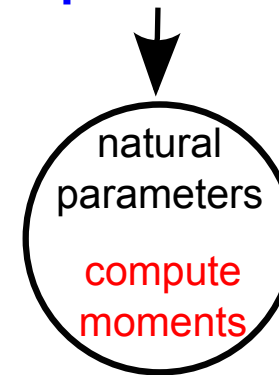
**un-normalised
Gaussian**



**un-normalised
Gamma**



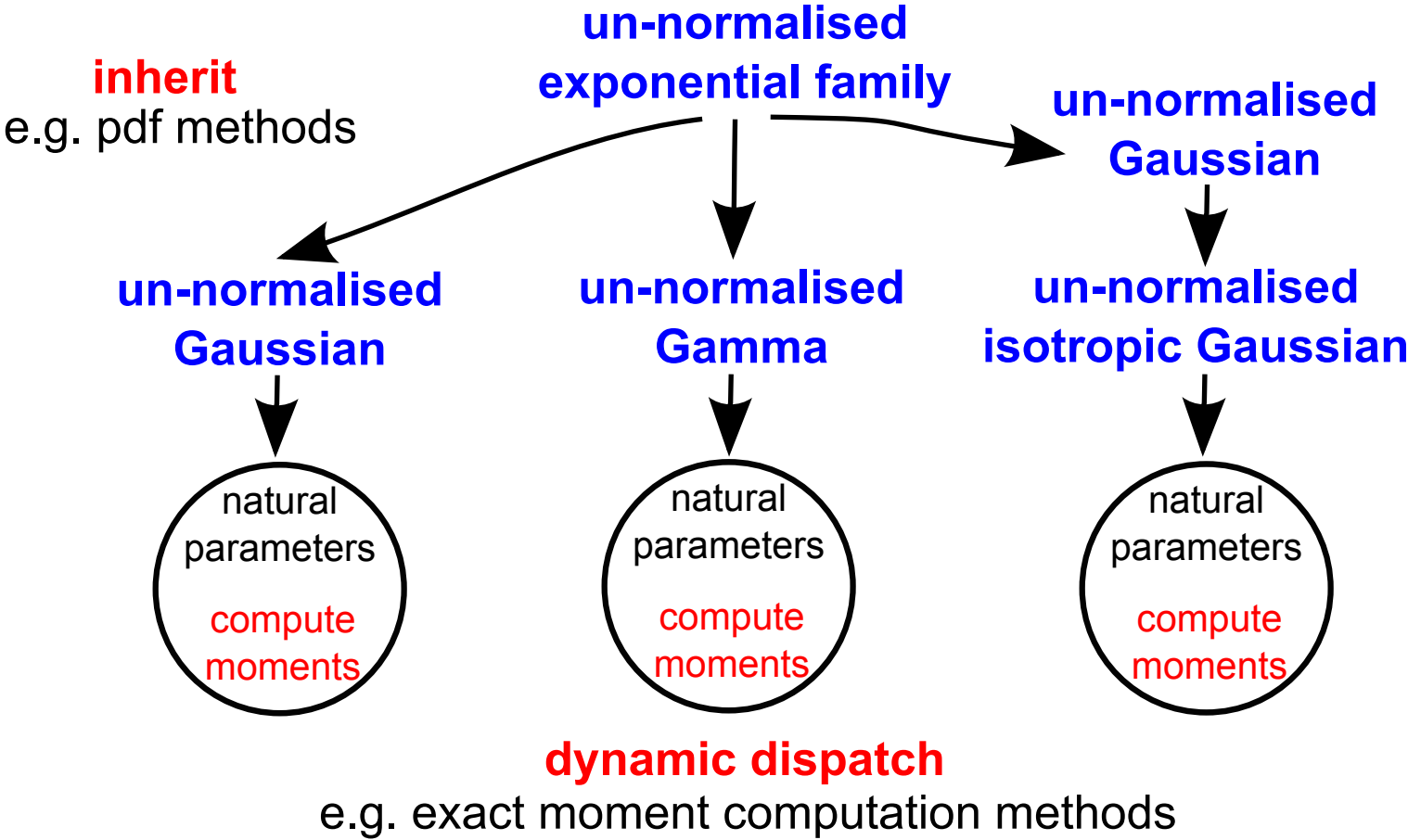
**un-normalised
isotropic Gaussian**



dynamic dispatch

e.g. exact moment computation methods

How does it do this: Inheritance and dynamic dispatch



Example

Where to find out more information

- **Loren's blog:**

When to use OO: <http://blogs.mathworks.com/loren/2008/08/18/when-to-create-classes-in-matlab/>

Design considerations for OO: <http://blogs.mathworks.com/loren/2011/03/08/common-design-considerations-for-object-properties/>

- **Tutorial for matlab OO:**

<http://www.mathworks.com/company/newsletters/articles/introduction-to-oo.html>

- **Software carpentry introduction:**

http://software-carpentry.org/4_0/oo/intro/

- **Online video tutorial:**

<http://www.mathworks.com/products/demos/shipping/matlab/WhatsNewR2008/ObjectOrientedProgramming.html>