**Ode to a Quaternion**

A quaternion is like a vector, but with a "w"

To construct one, use an axis and an angle, that's what we do

For rotations it must be normal, or otherwise its pure

So we normalise, divide by length, just to be sure

To invert a normal quaternion, we negate x, y and z

Multiply quaternion, vector, inverse quaternion and it rotates don't you see

A rotation of 0 radians is the same as two pi

To convert a quaternion to a matrix, we use the API

So here's a health to old Hamilton, your inventor it would appear

And to imaginary numbers floating in the hypersphere

* Dr Bryan Duggan