FASM.11ao9/3bf

Functional Algebraic State Machines and the zero-point axiom:

by john david jones
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I assert the zero-point axiom (ZPA): $n/0 = 0$

in contrast to the zero-point fallacy (ZPF): $n/0$ = undefined

it is my understanding that an axiom is an assertion that cannot be proven through recourse to first principles, but must be taken in itself to constitute a first principle. I submit, however, that whereas it may impossible to prove the truthfulness of an axiomatic assertion, it is possible to determine whether or not an axiom is useful. I intend to demonstrate that the zero-point axiom (ZPA) is useful and the zero-point fallacy (ZPF) is useless.

I will begin by proving that the ZPA may be used to construct Functional Algebraic State Machines (FASM). I realize that I have the weight of every physics textbook and every book ever written on computer programming standing in support of the ZPF. The simplest FASM is the ratio x/x. The ZPF turns this simple ratio into a kind of time bomb. It will work perfectly fine until it encounters a zero, at which point it will explode and precipitate a core dump.

Let me reiterate that I intend to demonstrate that thee ZPA is true to the extent that it is useful. I propose to demonstrate that the ZPA has the power to turn an ordinary ratio into a powerful and useful FASM.

Consider this mathematical function.

```
function a3([int]$a3La, [int]$a3Le){
	#power function
	#using nth root as proof of power of zero
	#equals one except for zero
	$aLua3		= $(a7b $a3La $a3La);
	$eLia3 = @(0, $a3Le, 1);
  while($eLia3[0]	-lt $eLia3[1]){
	$aLua3		= $(a2b $aLua3 $a3La);
	$eLia3[0]	= $eLia3[0] + $eLia3[2];
	}
	$aLua3;
}#a3
```

this is powershell code. The function a7b is the zero-point divider. And the function a2b is multiplication. This is the power function and it derives its functionality from the FASM:

$a3La / $a3La

this FASM gives us the starting point for the multiplication in the. It is either 0 or 1. this functional a3 tells us that zero taken to any power, including zero, is equal to zero, whereas every other number taken to the zero power is equal to one. A3 derives its functionality from the zero-point divider (a7b). The function a7b is the zero-piont divider and it allows us to write the a3 power function without recourse to a hard-coded exception. It does not precipitate a fatal exception at $a3La = 0. this same function interpreted with the zero-point fallacy requires at least two layers of exception handling.

Again, I am intending to support the truthfulness of the ZPA by proving that it is useful. Again, the ZPA allows us to construct FASMs (Functional Algebraic State Machines).

The next function is slightly more complicated than a3.

This is the function a5c and it is a function which gives the absolute value of its only argument.

```
function a5c([bigint]$a5qa){
	#absolute value
	#nontrivial fasm to determine multiplier
	# (-2)(n/n)(((1 - n)/(1 + n))/((1 - n)/(1 + n))) + 1 + (-2)((2 - ((1 + n)/(1 + n)))/2)
	[bigint[]]$eLiv			= @("0","0","0","0");
	$eLiv[0]	= $(a2c -2 $(a2c $(a7c $(a7c $(a8c 1 $a5qa) $(a1c 1 $a5qa)) $(a7c $(a8c 1
$a5qa) $(a1c 1 $a5qa))) $(a7c $a5qa $a5qa)));
	$eLiv[1]	= 1;
	$eLiv[2]	= $(a2c -2 $(a7c $(a8c 2 $(a7c $(a1c 1 $a5qa) $(a1c 1 $a5qa))) 2));
      $eLiv[3]  = $(a1 $eLiv[0] $(a1 $eLiv[1] $eLiv[2]));
      [bigint]$aLua5		= $(a2c $eLiv[3] $a5qa);
	$aLua5;
}#a5c
```

in this function a5c, a7c is the zero-point divider and a1c is addition. Subtraction is handled by the function a8c, and a2c is multiplication.

you will notice that there is no if/then. A typical implementation of the absolute value functional will ask if the argument is less than zero and use that conditional to determine the multiplier. The function a5c uses a FASM to serve its function with if-lesss branching, just one use of the FASM.

The FASM in this function is:

(-2)(n/n)(((1 - n)/(1 + n))/((1 - n)/(1 + n))) + 1 + (-2)((2 - ((1 + n)/(1 + n)))/2)

this FASM gives us the value of -1 for the multiplier for every n less than zero. It gives a value of 1 for all other values of n. if I write the code without recourse to a FASM, I cannot be certain that the behavior is true or useful.

Take the first section of the a5c FASM:

(-2)(n/n)(((1 - n)/(1 + n))/((1 - n)/(1 + n)))

this is a FASM used as part of a larger more complex FASM (Functional Algebraic State Machine). Interpreted by the ZPF (zreo-point fallacy), this is an expression that will produce a fatal exception at n = 1. the ZPA (zero-point axiom) turns this into a FASM which gives a value of -2 for all negative values less than -1. this FASM gives us a value of 0 for all positive n, and thanks to the simple FASM n/n, it gives a value of zero for n = 0.

the FASM (-2)((2 - ((1 + n)/(1 + n)))/2) interpreted by the ZPA gives us a FASM which gives a value of -2 for n = -1, and a zero resultant for all other values of n.

this FASM (-2)(n/n)(((1 - n)/(1 + n))/((1 - n)/(1 + n))) + 1 + (-2)((2 - ((1 + n)/(1 + n)))/2) is used to give us the multiplier in the absolute value function. This FASM demonstrates the usefulness of the ZPA (zero-point axiom). Consequently, the same complex expression demonstrates the uselessness of the ZPF (zero-pooint fallacy). A5c is the absolute value function and its use of a FASM tends to suggest that its functionality is organically useful. The same expression interpreted with the ZPF is utterly useless.

Consider a simple example of determining an average from a set of samples.

A = x/n

A is the average and n is the number of samples. Let x be the sum of all samples. What if we have an x = 0 because there are 0 samples. In such a case, the average A would be zero. The ZPA turns this expression into a FASM: 0/0 = 0.

the ZPA and the notion of relativistic mass:

I propose to examine the function:

mr = m0/(1 – v/c)

where mr is the relativistic mass and m0 is the rest mass and c is the speed of light. This is a useful equation. Let’s look at the difference between interpreting this with the ZPA in contrast to the information it gives when interpreted by the ZPF (zero-point fallacy).

The ZPA turns the expression m0/(1 – v/c) into a FASM. I should note that in the ZPA division is like integer division in the c programming language. 5/6 = 0 and 6/5 = 1. accordingly, v/c is zero for all v < c, and it 1 for v = c. the limit theory of calculus and the ZPF are based on an incompatible admixture of rational and floating-point functionality.
In the classical (ZPF) interpretation of this ration v/c, v is seen to approach c on an asymptote.

According to the ZPF, the relativistic mass of an object moving at the speed of light is seen to be infinite (or undefined). The ZPA and the FASM tell us that the relativistic mass is 0 at v = c. there is no asymptotic approach to an absolute like the speed of light in a vacuum.

Using the same FASM to examine relativistic length:

Lr = L0/(1 - v/c)

the ZPF tells us that the relativistic length of an object approaches infinity as v approaches c. one would expect very fast moving objects like neutrinos to resemble modulated standing waves as their relativistic length approaches the infinite. According to the ZPA, this FASM tells us that the relativistic length is 0 for a system where v = c.

according to the ZPF and the classical interpretation of the limit as an asymptotic approach to 1 in the ration v/c the relativistic length approaches infinite as the expression (1 – v/c) approaches 0. 0.9999999c/1.0c. In the ZPA interpretation the ratio v/c is 1 where v = c.

3.0*10^8 m/s / 3.0*10^8 m/s

it is a logical fallacy to interpret v/c as a floating-point approach to 1.0 divided by 1.0 where 0.0/1.0 is the v/c for an object at rest. This is a unitless error and the FASM interprets v//c as a ratio of absolutes.

I intended here to prove the usefulness of the ZPA (zero-point axiom) in contrast to the uselessness of the ZPF. The zero-point fallacy is hard-coded into every scientific discipline at every level. It being an axiom it must be taken as true. I submit, however, that the ZPF and its role in classical mechanics (to say nothing of quantum mechanics) has made it impossible for us to do certain fundamental and necessary things: faster-than-light communications, and fusion power. There is a 30 minute delay for communications with machines on the surface of mars. We have to imagine that there is some relationship between massive objects like planets that transcends the speed of light, which is seen to be very slow even for such small distances like that between the earth and the sun.

I have written a module of functions pertaining to the ZPA (zero-point axiom). It is very abstract on one level, but it is immediately very useful in a universe of the Functional Algebraic State Machine. It is essentially a manifesto.

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It can be found at:

https://github.com/adbiLenLa/zeropoint

It stands as proof of the usefulness of the ZPA (zero-point axiom) and the powerful state machines it produces from ordinary equations (FASM).

I realize that the ZPA will require everyone to go back to school as it will precipitate a complete rewrite of virtually every book in related fields. We had to imagine that the universe is a place where we will be able to reach other stars. The physical universe interpreted with the zero-point fallacy has us hopelessly stuck at the bottom of an energy well. I believe that the ZPA and the FASM are what w have been waiting for.

11aod/3bj

Tangent and the Zero-point axiom:

by john david jones

zero-point axiom (ZPA): $n/0 = 0$

zero-point fallacy(ZPF): $n/0 = \infty$

no one has ever proven the zero-point fallacy. It Is impossible to prove because it is false.

I propose to prove the ZPA by taking recourse to the tangent function. It is a surprisingly easy thing to do.

We begin by dividing the unit circle into a finite number of equal slices. I have chosen an increment of $2\pi/1000$. I will assume that the tangent function is continuous.

Because the hard coding of the ZPF into every implementation of the tangent function, we will not be able to calculate the valve of $\tan(\pi/2)$ directly. Instead, we will divide the circle into a finite number of discrete slices ($2\pi/1000$).

$\tan(\pi/2) = (\tan(\pi/2 - 2\pi/1000) + \tan(\pi/2 + 2\pi/1000))/2$

[Math]::Tan([Math]::PI/2 – 2*[Math]::PI/1000) = 159.152

[Math]::Tan([Math]::PI/2 + 2*[Math]::PI/1000) = -159.152

$\tan(\pi/2) = (159.152 - 159.152)/2 = 0$

$\tan(\pi/2) = 1/0 = (159.152 - 159.152)/2 = 0$

no matter how small we make the discrete slices, the tangent function is always symmetrical around $\pi/2$ radians. The ZPF makes the tangent function discontinuous at $\pi/2$. The zero-point axiom, however, makes the tangent function continuous.

If the tangent function is assumed to be continuous, then we may postulate that the sum of the tangent function over the interval 0 to $(2\pi - 2\pi/cI)$, where cI is countable infinity, will be zero.

$\Sigma\tan(\theta) = 0$

in order for this to be true, every $\tan(\theta)$ must be finite.

Sincerely,

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