Re: A flaw with Venkat Reddy's arithmetic.

Source: http://sci.tech−archive.net/Archive/sci.math/2007−12/msg00656.html

- *From*: Marshall <marshall.spight@xxxxxxxxx>

- *Date*: Mon, 3 Dec 2007 12:16:48 −0800 (PST)

On Dec 3, 12:37 am, Han de Bruijn <Han.deBru...@xxxxxxxxxxxxxx> wrote:

> Marshall wrote:
>
> > Frankly I'm really pissed off at the real numbers and how hard
> > they are to do calculations with.
> >
> > As to what they mean, the answer a lot of people run with
> > is that they mean an interval or a range of numbers. But I
> > find that the model of them as being precise values with
> > imprecise operators (approximations) is a better description.
> >
> > For the interested:
> >
> > http://repository.readscheme.org/ftp/papers/sw2004/egner.pdf
>
> In another poster you wrote, when I asked you for ever having solved a
> _real_ problem:
>
> > Well, I have code in systems that handle billions of dollars
> > in transactions a year. So, yeah.
>
> Most experience I have with floating point numbers is in the context of
> _technical_ applications. With administrative applications (: finance),
> I'm relying on integer numbers, no floats.

Yes, for monetary quantities, floating point is a poor choice.

However, you didn't ask me if I've solved any technical/scientific

problems. You asked simply about "real" problems, which I
interpreted to mean "actual, practical" problems and not "real"
problems as in the real numbers. Perhaps I mistook you.

> So I don't understand quite
> well your frustrations about floating point numbers with dollars.

I have not expressed any frustrations with floating point numbers
with dollars. I did however express a frustration that the real
numbers include uncomputable numbers. Like others, such
as perhaps yourself, I am interested in extending the reach of
software as far as possible, and the limits on computability
sometimes chafe. Floating point numbers give us the ability
to model the reals within some certain degree of precision,
and in fact that degree of precision is almost always sufficient
for the kinds of problems we need to solve. But at the meta
level, there are unfortunate circumstances, such as the ones
I mentioned about the severely limited algebraic properties
of the floating point operators.

I tried to start reading about numerical analysis this weekend,
but didn't get very far. I would love to learn about a model
for the behavior of floating point. The operators are *almost*
associative, for example. If we can say precisely what "almost"
means, then perhaps we can recover some or all of the utility
that is lost with the passing of exact algebraic equalities.

This is still a very vague thought at this point however. I could
be completely on the wrong track.

Marshall
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