RSBag - Bug #641
Does bag-play respect original timing?

10/17/2011 03:45 PM - Anonymous

Status:	Resolved	**Start date:**	10/17/2011
Priority:	High	**Due date:**	
Assignee:	J. Moringen	**% Done:**	100%
Category:		**Estimated time:**	0.00 hour
Target version:	0.5		

Description

The attached file was recorded with about 100Hz. On the machine here, it plays back much slower with about 45Hz. I've attached the corresponding file for reference. Can anyone reproduce 100Hz on replay?

Associated revisions

Revision 06e940de - 10/18/2011 02:39 AM - J. Moringen

Fixed a huge performance bug in src/transform/rsb-event.lisp

fixes #641

- src/transform/rsb-event.lisp (decode rsb-event simple-array): clear user-infos and user-times slots of the reused data-holder; otherwise stuff will accumulate and cause horrible slowdowns

Revision 27bcca75 - 10/18/2011 03:20 AM - J. Moringen

Added mixin class in src/rsb/replay/delay-correcting-mixin.lisp

refs #641

- src/rsb/replay/delay-correcting-mixin.lisp: new file; contains `delay-correcting-mixin' mixin class
- src/rsb/replay/recorded-timing.lisp (recorded-timing): added superclass `delay-correcting-mixin'
- src/rsb/replay/fixed-rate.lisp (fixed-rate): likewise
- src/rsb/replay/package.lisp (package rsbag.rsb.replay): added exported symbols delay-correcting-mixin, strategy-previous-call and strategy-previous-delay
- cl-rsbag.asd (system cl-rsbag): added file src/rsb/replay/delay-correcting-mixin.lisp

Revision eb3b006a - 10/18/2011 03:30 AM - J. Moringen

Decoupled timed replay and speedup possibility in src/rsb/replay/

refs #641

- src/rsb/replay/timed-replay-mixin.lisp (timed-replay-mixin): removed superclass `speed-adjustment-mixin'
- src/rsb/replay/recorded-timing.lisp (recorded-timing): added superclass `speed-adjustment-mixin'
- src/rsb/replay/fixed-rate.lisp (fixed-rate): likewise

History

#1 - 10/17/2011 05:35 PM - S. Wrede

- Status changed from New to Feedback

Just tested it on my Mac:

With the file attached to this post, I get after a few seconds the following results which then more or less stay constant:

```
2011-Oct-17 17:32:29.042475|9400049886.76 ±231693.06|   21 Hz|
2011-Oct-17 17:32:30.044729|9400793046.30 ±215312.11|   23 Hz|
2011-Oct-17 17:32:31.045339|9401554429.61 ±221614.16|   23 Hz|
2011-Oct-17 17:32:32.047289|9402329482.65 ±224649.75|   23 Hz|
2011-Oct-17 17:32:33.048258|9403096778.47 ±279264.77|   15 Hz|
2011-Oct-17 17:32:34.048644|9403967367.43 ±220907.03|   21 Hz|
2011-Oct-17 17:32:35.049494|9404750478.32 ±227878.41|   19 Hz|
2011-Oct-17 17:32:36.050255|9405659716.31 ±220366.45|   16 Hz|
2011-Oct-17 17:32:37.050752|9406385993.00 ±236775.59|   20 Hz|
2011-Oct-17 17:32:38.051344|9407215164.50 ±233704.64|   20 Hz|
```

However, what I also just became aware of is that bag-info displayed a frequency value of 13. I doubt that this was true for the recorded data. I need to check this again.

#2 - 10/17/2011 05:58 PM - J. Moringen

If the issue is urgent, please call flier.

#3 - 10/18/2011 12:26 AM - J. Moringen

- Tracker changed from Support to Bug
- Project changed from Robotics Service Bus to RSBag
- Category deleted (Common Lisp Tools)
- Status changed from Feedback to In Progress

#4 - 10/18/2011 12:57 AM - J. Moringen

The recorded data seems to be OK. Here are 100 differences between successive create timestamps from near the end of the recording:

```
RSBAG> (with-bag (bag "/tmp/WalkFourLegsCCA2.tide")
         (let ((chan (first (bag-channels bag))))
           (iter (for e1 each chan :from 30000 :to 30100)
                 (for e2 each chan :from 30001 :to 30101)
                 (collect (local-time:timestamp-difference
                           (rsb:timestamp e2 :create)
                           (rsb:timestamp e1 :create))))))
(0.010299d0 0.009938d0 0.010236d0 0.010066d0 0.010166d0 0.010113d0 0.010246d0
 0.010037d0 0.010095d0 0.010207d0 0.010105d0 0.01021d0 0.010115d0 0.010314d0
 0.009882d0 0.010236d0 0.010219d0 0.010756d0 0.009527d0 0.010162d0 0.010111d0
 0.010163d0 0.010155d0 0.010097d0 0.01017d0 0.010157d0 0.010235d0 0.009964d0
 0.010232d0 0.01006d0 0.010301d0 0.01008d0 0.010275d0 0.010024d0 0.010094d0
 0.01021d0 0.010088d0 0.010191d0 0.010128d0 0.010162d0 0.010076d0 0.010205d0
 0.010096d0 0.010364d0 0.009929d0 0.010181d0 0.010138d0 0.010021d0 0.010146d0
 0.01013d0 0.010169d0 0.010082d0 0.010229d0 0.01012d0 0.010147d0 0.01012d0
 0.010136d0 0.010139d0 0.01042d0 0.00978d0 0.01016d0 0.010094d0 0.010167d0
 0.010128d0 0.010172d0 0.010221d0 0.010002d0 0.010195d0 0.010106d0 0.010179d0
 0.010067d0 0.010257d0 0.010028d0 0.010185d0 0.0101d0 0.010139d0 0.010109d0
 0.010251d0 0.010059d0 0.010132d0 0.01018d0 0.010143d0 0.01035d0 0.01025d0
 0.010145d0 0.010129d0 0.010215d0 0.010136d0 0.012665d0 0.010539d0 0.010008d0
 0.009808d0 0.010183d0 0.010081d0 0.010193d0 0.011656d0 0.010122d0 0.010168d0
 0.010122d0 0.010141d0)
```

#5 - 10/18/2011 02:34 AM - J. Moringen

Turns out, an optimization in cl-rsbag had gone *very* wrong: a pb data-holder was reused in every deserialization operation (you know where this is going, right?). Failing to clear certain fields of the data-holder between subsequent deserializations caused it to accumulate every single meta-data item decoded so far. So at the end of the file, containing roughly 30.000 events, 30.000 meta-data items would be decoded *for every single event*. No wonder the replay got a little slow in the end. lol.

#6 - 10/18/2011 02:40 AM - J. Moringen

- Status changed from In Progress to Resolved

- % Done changed from 0 to 100

Applied in changeset r197.

#7 - 10/18/2011 03:27 AM - J. Moringen

For good measure, I added an adaptive delay computation in r198. This should make the replay timing relatively faithful, even on loaded systems.

#8 - 10/18/2011 03:30 AM - J. Moringen

If the bug fix and r198 are not enough, here are some more options to try:

- Artificially speed up the replay:
  ```
  ./bag-play -r 'recorded-timing :speed 1.3' /tmp/WalkFourLegsCCA2.tide
  ```
- Force a fixed rate:
  ```
  ./bag-play -r 'fixed-rate :rate 1000' /tmp/WalkFourLegsCCA2.tide
  ```
- Disable the progress display if the terminal causes a slowdown:
  ```
  ./bag-play -p none /tmp/WalkFourLegsCCA2.tide
  ```

Files

WalkFourLegsCCA2.tide	7.33 MB	10/17/2011	Anonymous