A Study of INC Runs in Sequence

Young-Kyoon Suh

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1 Description

In this document we study the characteristics of INC runs that are executed in sequence.

Broadly speaking, there are two *subjects* included in the document. The first subject, which is discussed in Section 1, involves *i*) running as a *batch* a series of INCs with increasing task length and *ii*) pausing the batch run. This entire batch run including the pause continues until the specified number of iterations, say 30, is specified. More specifically, INC1, ..., INC16384 are consecutively run as a batch, and then the entire batch run sleeps for an hour, and then another batch run begins and stops, and again the new batch run resumes. This type of batch run is distinct from repeatedly running the same INC with a single task length.

The second subject, which is discussed in Section 2, iconcerns dividing a single run of 1000 samples on INC16 into five consecutive subruns of 200 samples. For each subrun, we examine their respective PT (program time) histograms and see if the histograms look similar to each other.

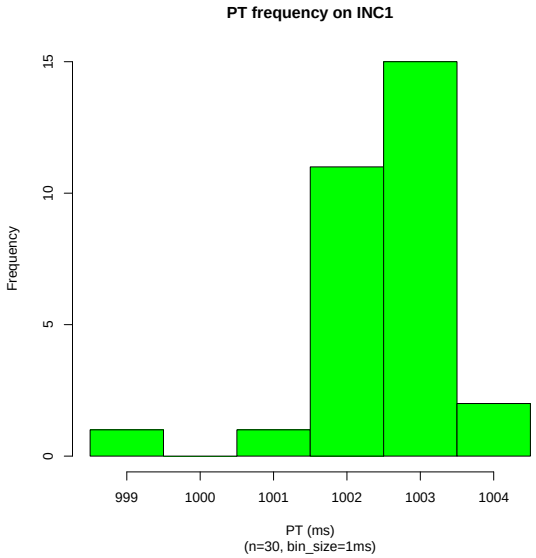
1.1 Experiment Notes

Table 1 provides a short description of our experimental runs, on which the following histograms are based.

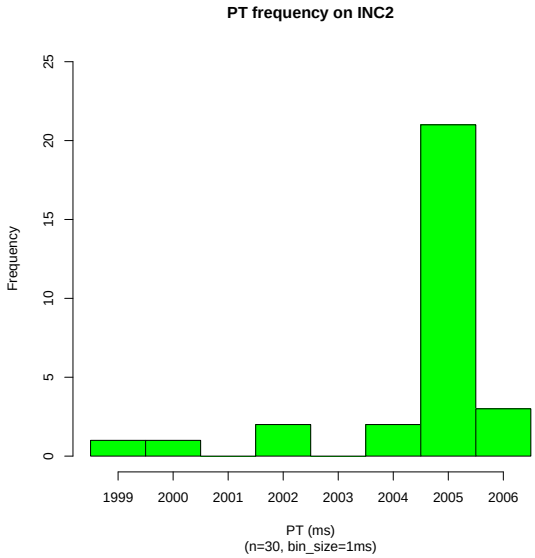
Machine	Task Length (sec)	Description	Experiment Period
`sodb9`	INC16	Each run with 1,000 samples	2017-03-02 $\sim$ 2017-03-07
`sodb9`	INC1$\sim$INC16384	One run in which each INC has 30 samples	2018-11-17 $\sim$ 2018-12-02

Table 1: Notes on experiment runs used for histograms

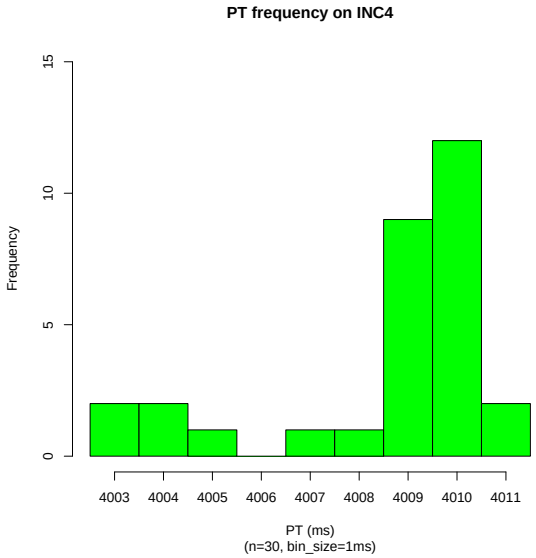
2 INC Run in Sequence



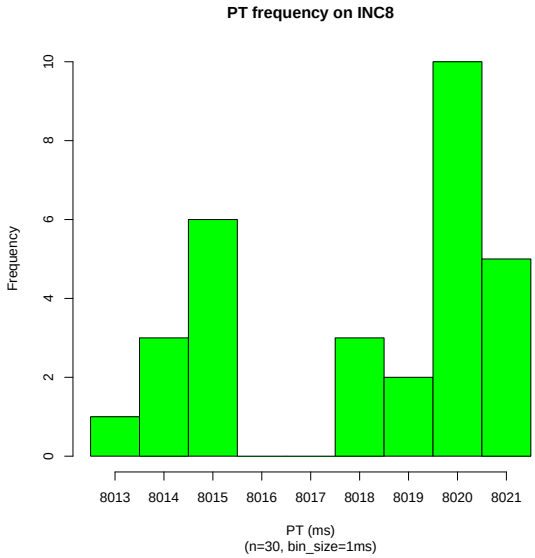
(a) PT frequency on INC1 on `sodb9`



(b) PT frequency on INC2 on `sodb9`

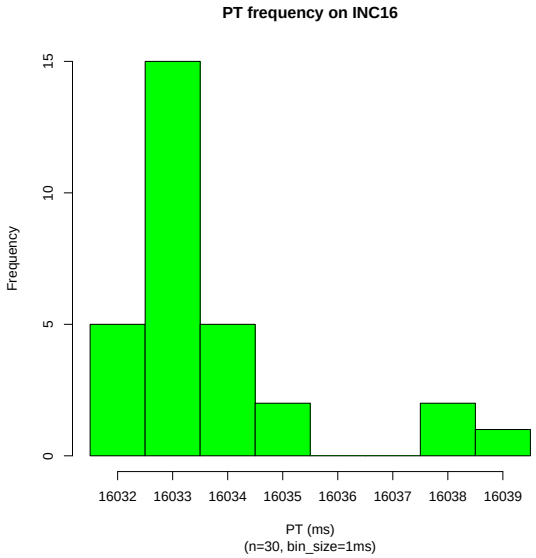


(c) PT frequency on INC4 on `sodb9`

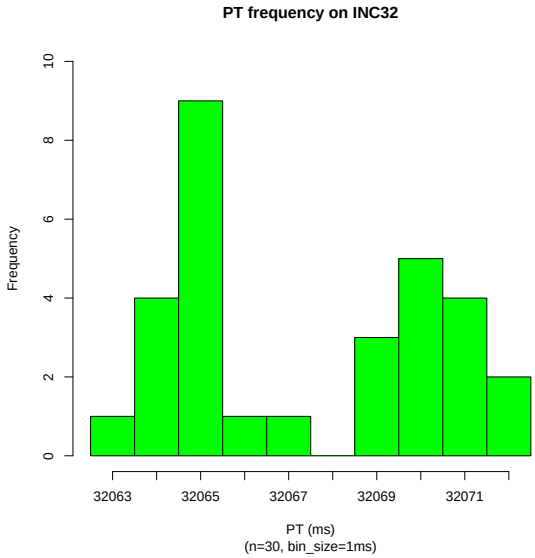


(d) PT frequency on INC8 on `sodb9`

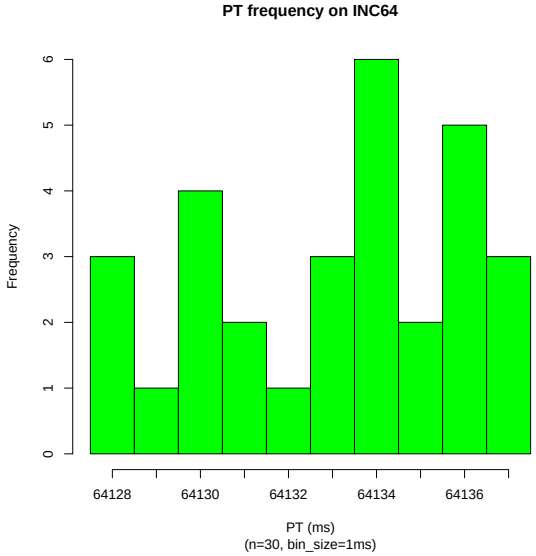
Figure 1: PT Histograms of INC1 ... INC8



(a) PT frequency on INC16 on `sodb9`

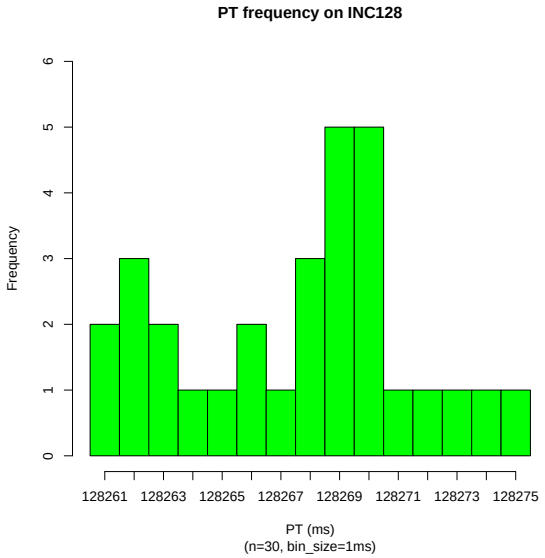


(b) PT frequency on INC32 on `sodb9`

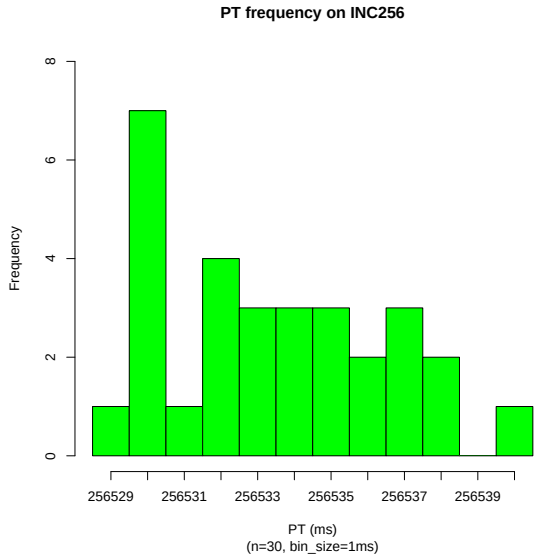


(c) PT frequency on INC64 on `sodb9`

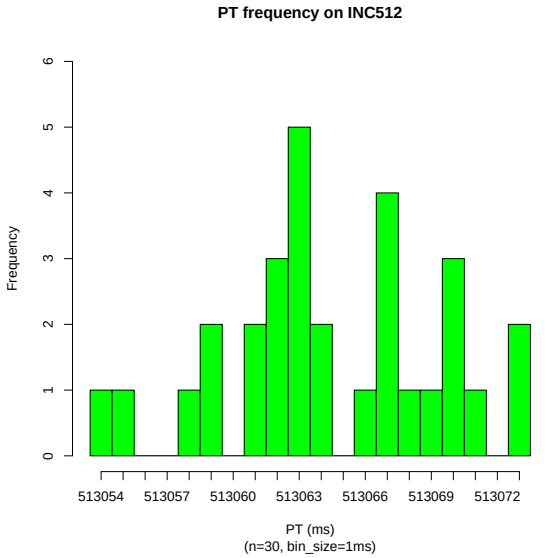
Figure 2: PT Histograms of INC16 ... INC64



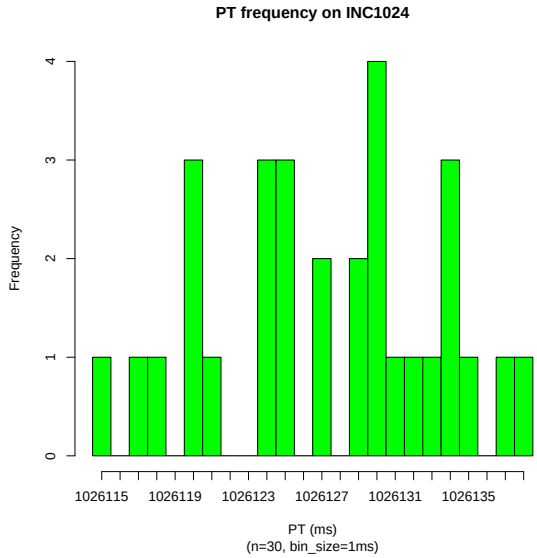
(a) PT frequency on INC128 on `sodb9`



(b) PT frequency on INC256 on `sodb9`

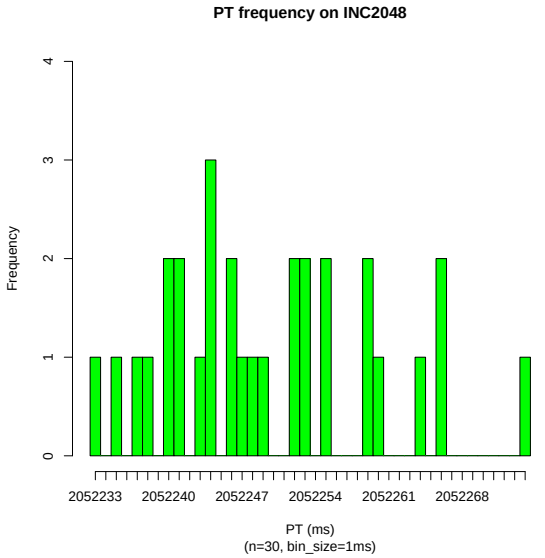


(c) PT frequency on INC512 on `sodb9`

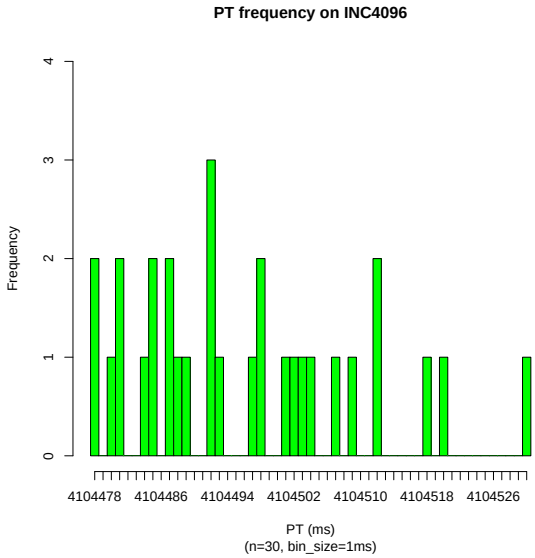


(d) PT frequency on INC1024 on `sodb9`

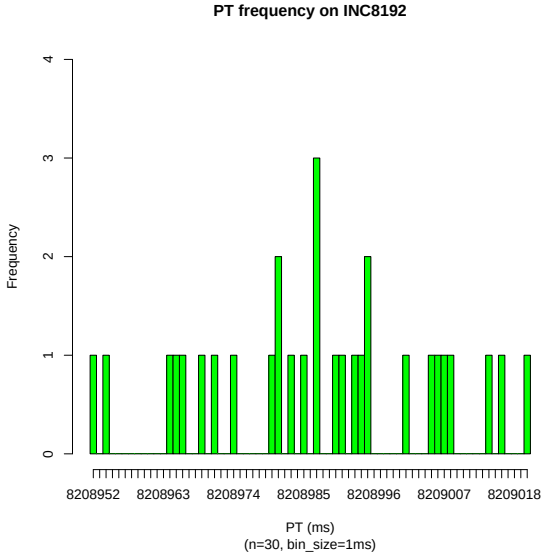
Figure 3: PT Histograms of INC256 ... INC1024



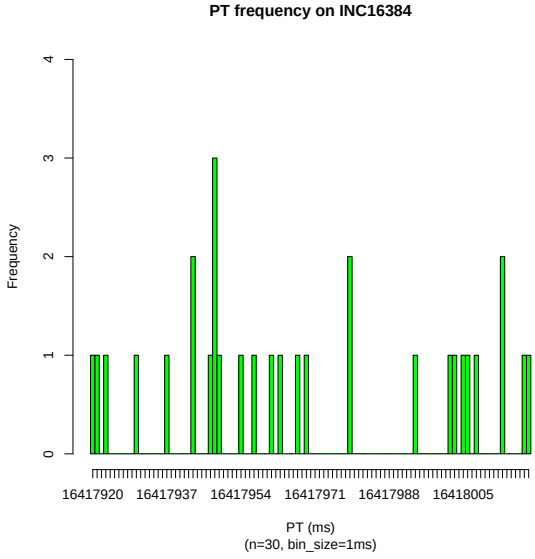
(a) PT frequency on INC2048 on `sodb9`



(b) PT frequency on INC4096 on `sodb9`



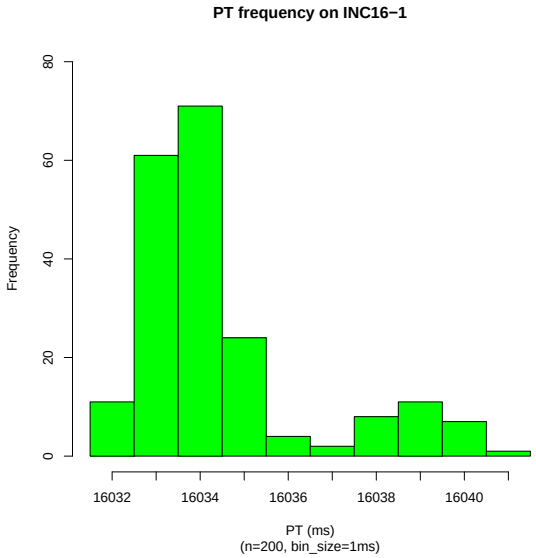
(c) PT frequency on INC8192 on `sodb9`



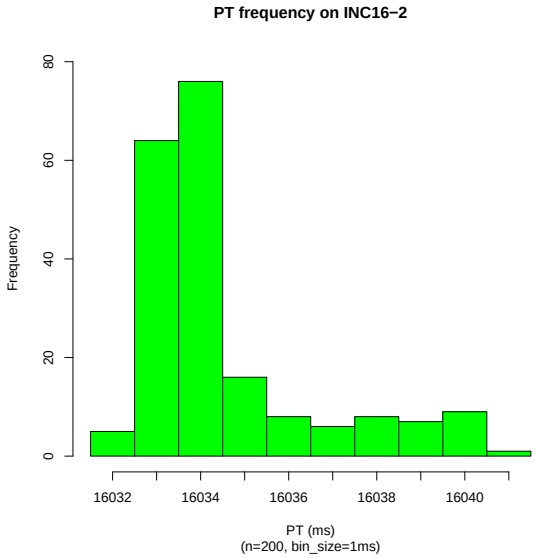
(d) PT frequency on INC16384 on `sodb9`

Figure 4: PT Histograms of INC2048 ... INC16384

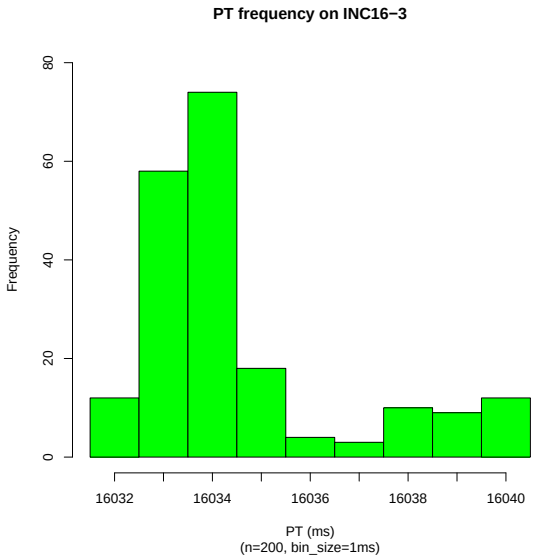
3 Decomposition of INC16 Samples



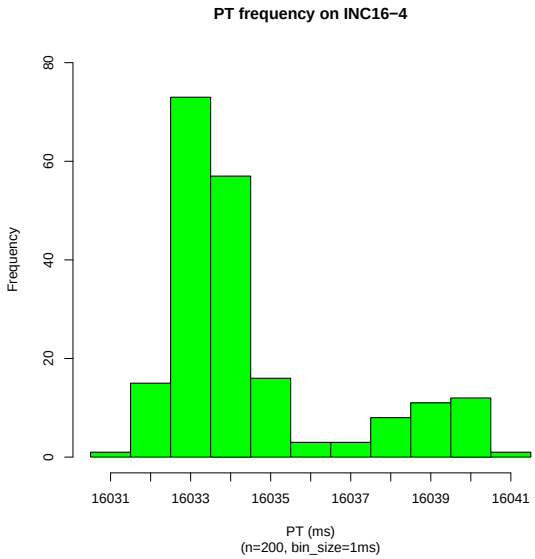
(a) PT frequency on INC16 with the first 200 samples on `sodb9`



(b) PT frequency on INC16 with the next 200 samples on `sodb9`

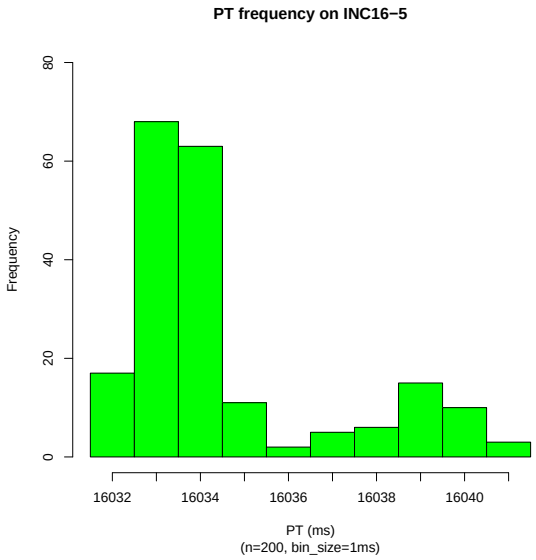


(c) PT frequency on INC16 with the next 200 samples on `sodb9`



(d) PT frequency on INC16 with the next 200 samples on `sodb9`

Figure 5: PT Histograms of INC16-1∼INC16-4



(a) PT frequency on INC16 with the next 200 samples on `sodb9`

Figure 6: PT Histograms of INC16-5