

# A Comprehensive Study of Characterizing Program Execution Time

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## 1 Experiment Notes

Task Length	Description	Time Length
INC1~INC64	Runs of 1000 samples (on <code>sodb12</code> ).	2013-10-14 ~ 2013-10-15
INC128~INC2048	Runs of 300 samples (on <code>sodb12</code> ).	2013-12-12 ~ 2013-12-21
INC4096	A run of 300 samples (on <code>sodb12</code> ).	2014-06-23 ~ 2014-07-10
INC4096	A run of 40 samples (on <code>sodb12</code> ).	2015-05-07 ~ 2015-05-09
INC8192	Runs of 40/40/40 samples (on <code>sodb12</code> ).	2015-04-23 ~ 2015-04-27 / 2017-01-16 ~ 2017-01-20 / 2017-01-25 ~ 2017-01-29
INC16384	Runs of 40/40/40 samples (on <code>sodb12</code> ).	2015-04-23 ~ 2015-04-23 / 2017-01-05 ~ 2017-01-13 / 2017-01-29 ~ 2017-02-06

Table 1: Notes on the regular INC data used for the histograms

## 2 Measurement Quality

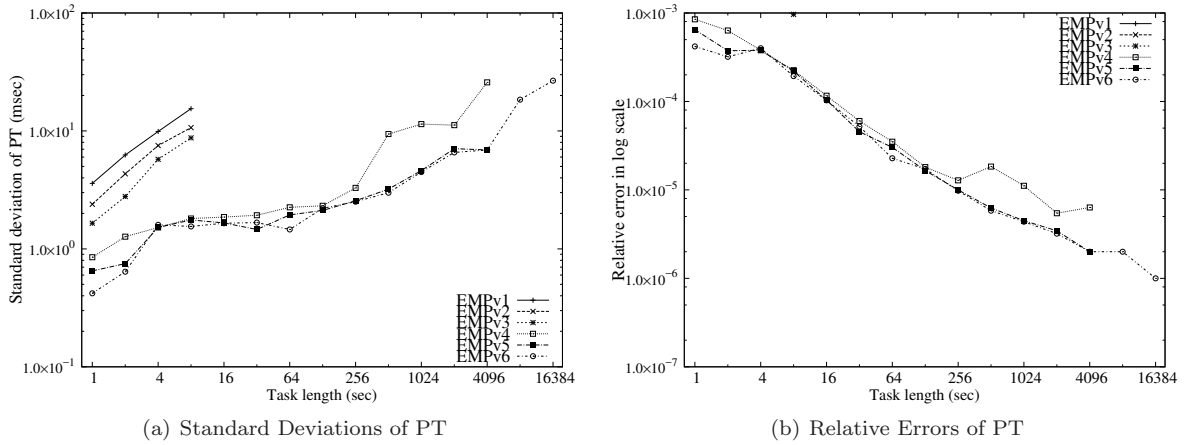


Figure 1: Measurement Quality Comparison among the EMP versions: updated with INC4096's another run

### 3 Histograms on the EMPv4 Data

The base data of the following histograms are from Table 1.

#### 3.1 ET

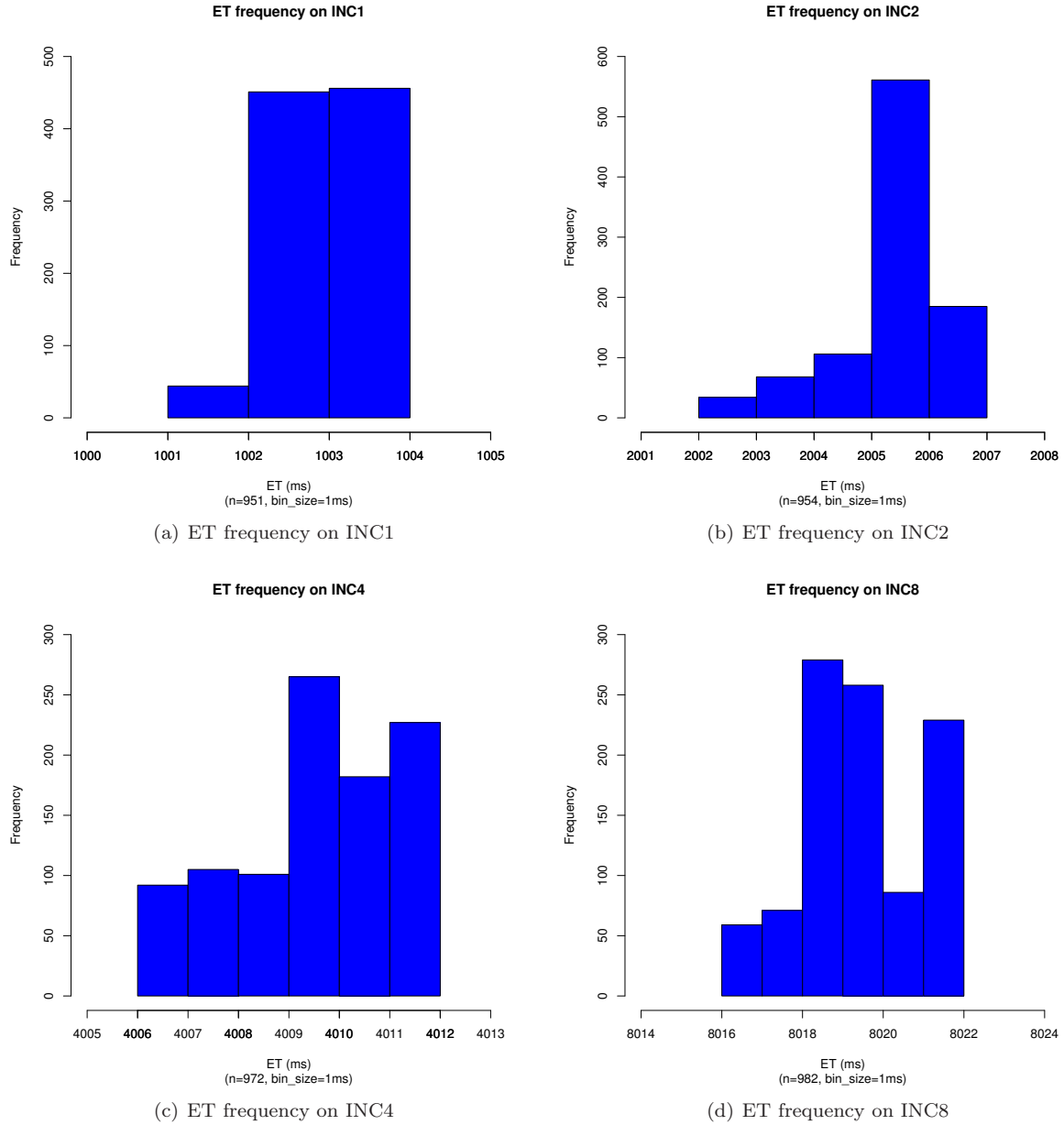
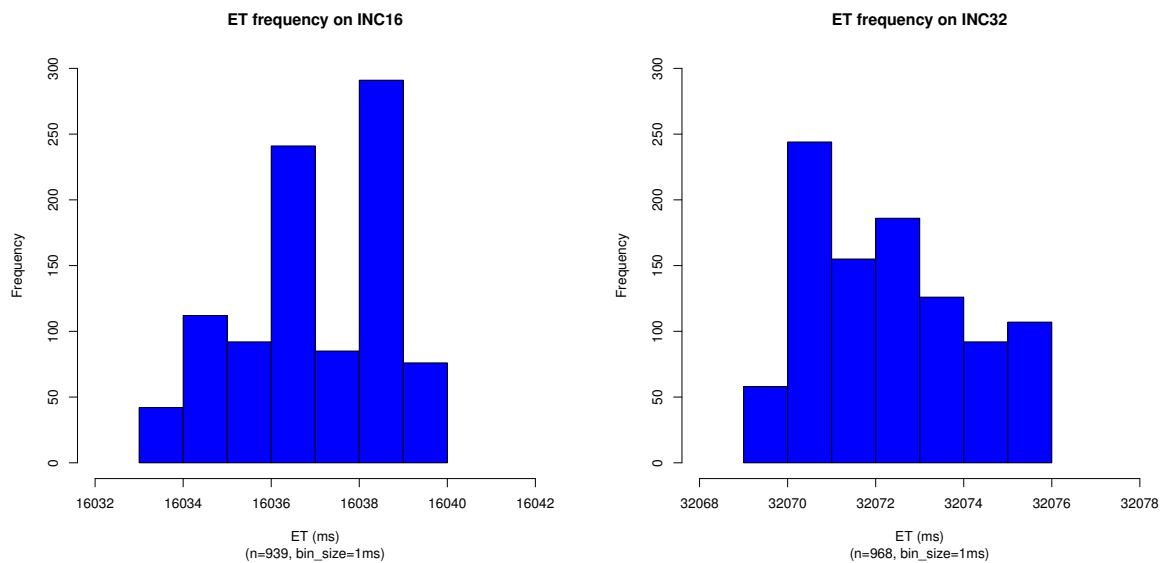
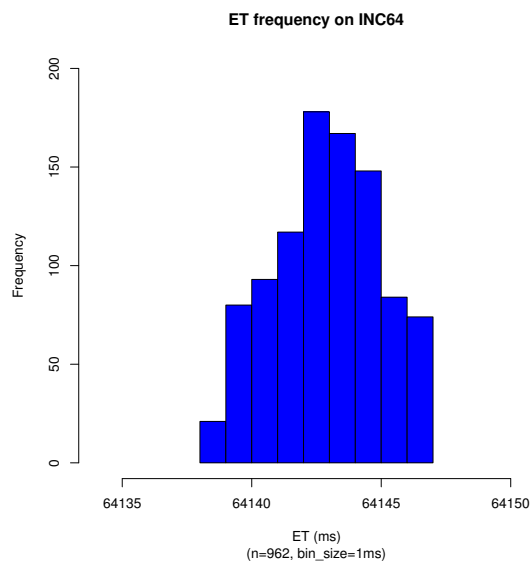


Figure 2: ET Histograms of INC1 ... INC8



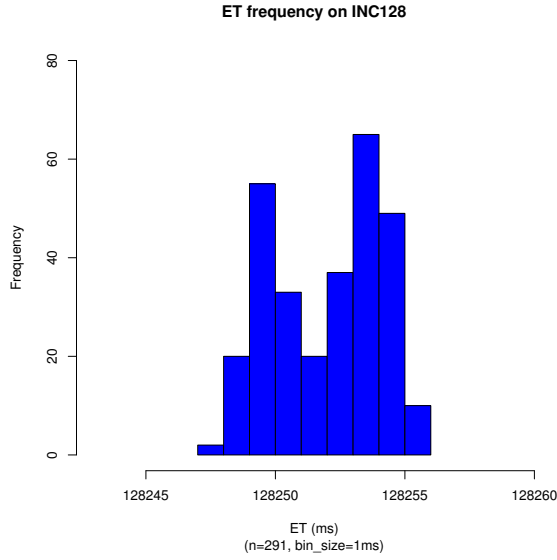
(a) ET frequency on INC16

(b) ET frequency on INC32

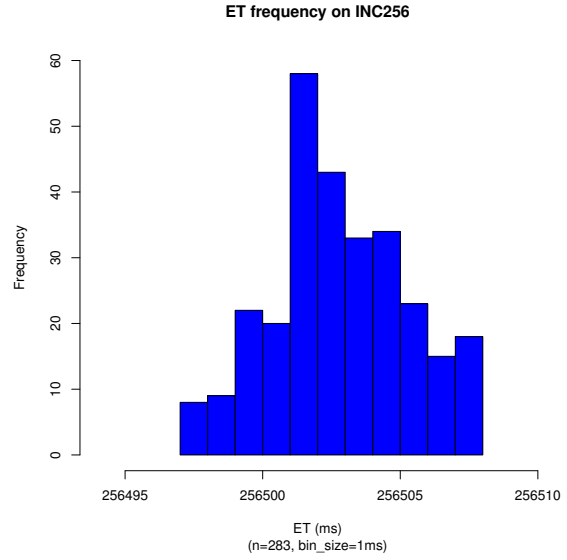


(c) ET frequency on INC64

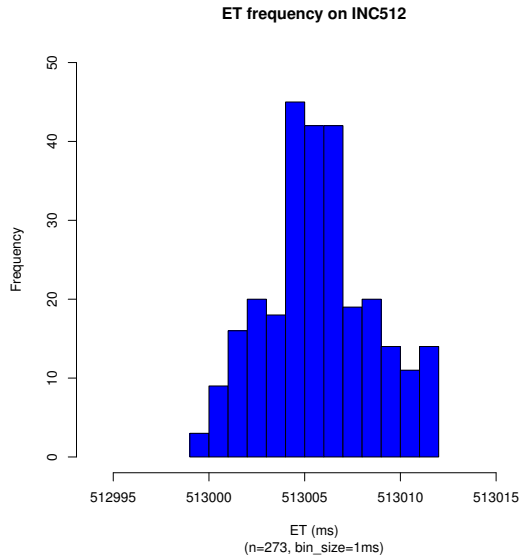
Figure 3: ET Histograms of INC16 ... INC64



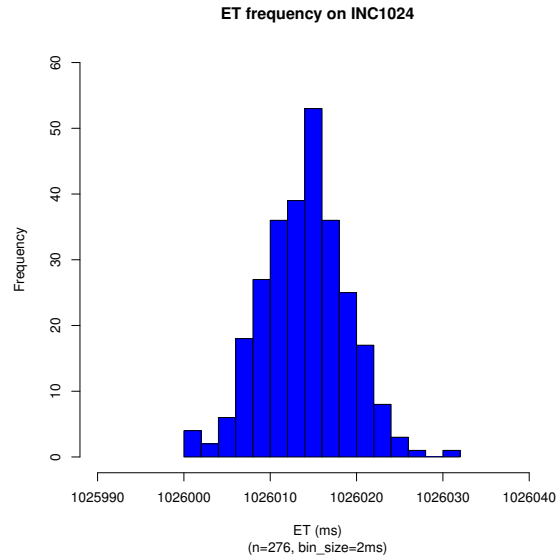
(a) ET frequency on INC128



(b) ET frequency on INC256

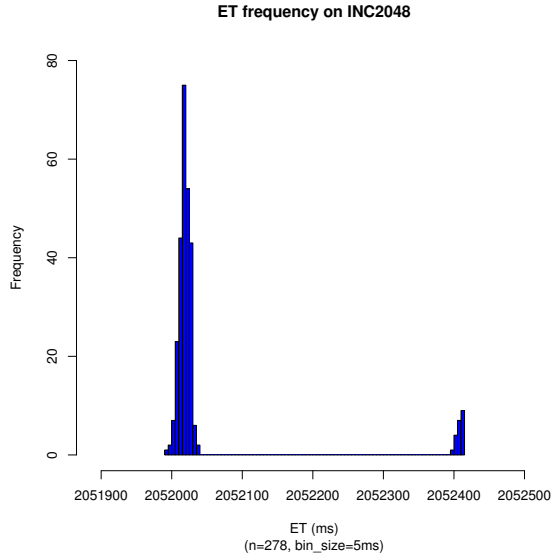


(c) ET frequency on INC512

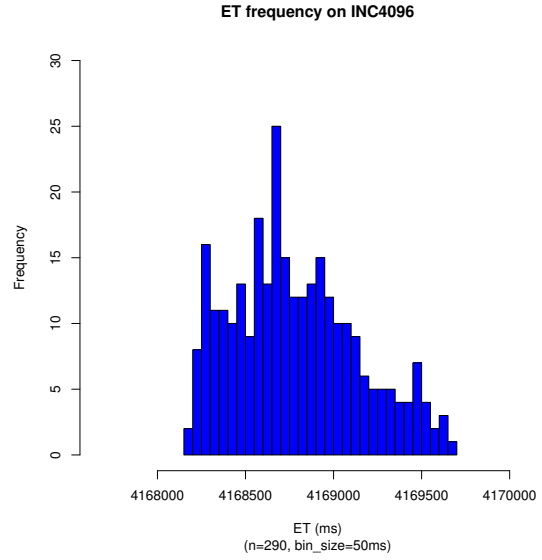


(d) ET frequency on INC1024

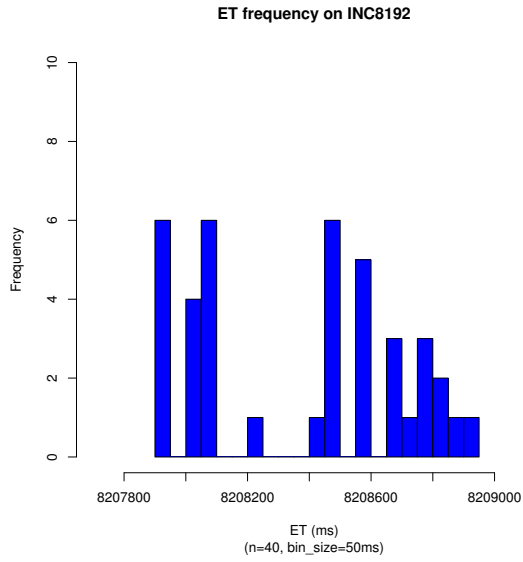
Figure 4: ET Histograms of INC128 ... INC1024



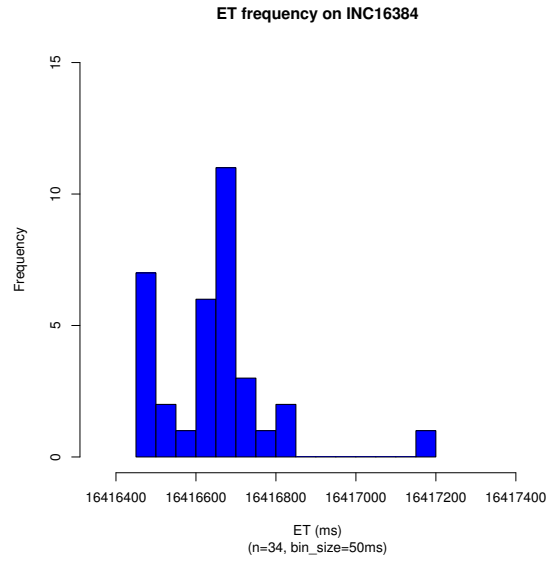
(a) ET frequency on INC2048



(b) ET frequency on INC4096



(c) ET frequency on INC8192



(d) ET frequency on INC16384

Figure 5: ET Histograms of INC2048 ... INC16384

## 3.2 PT

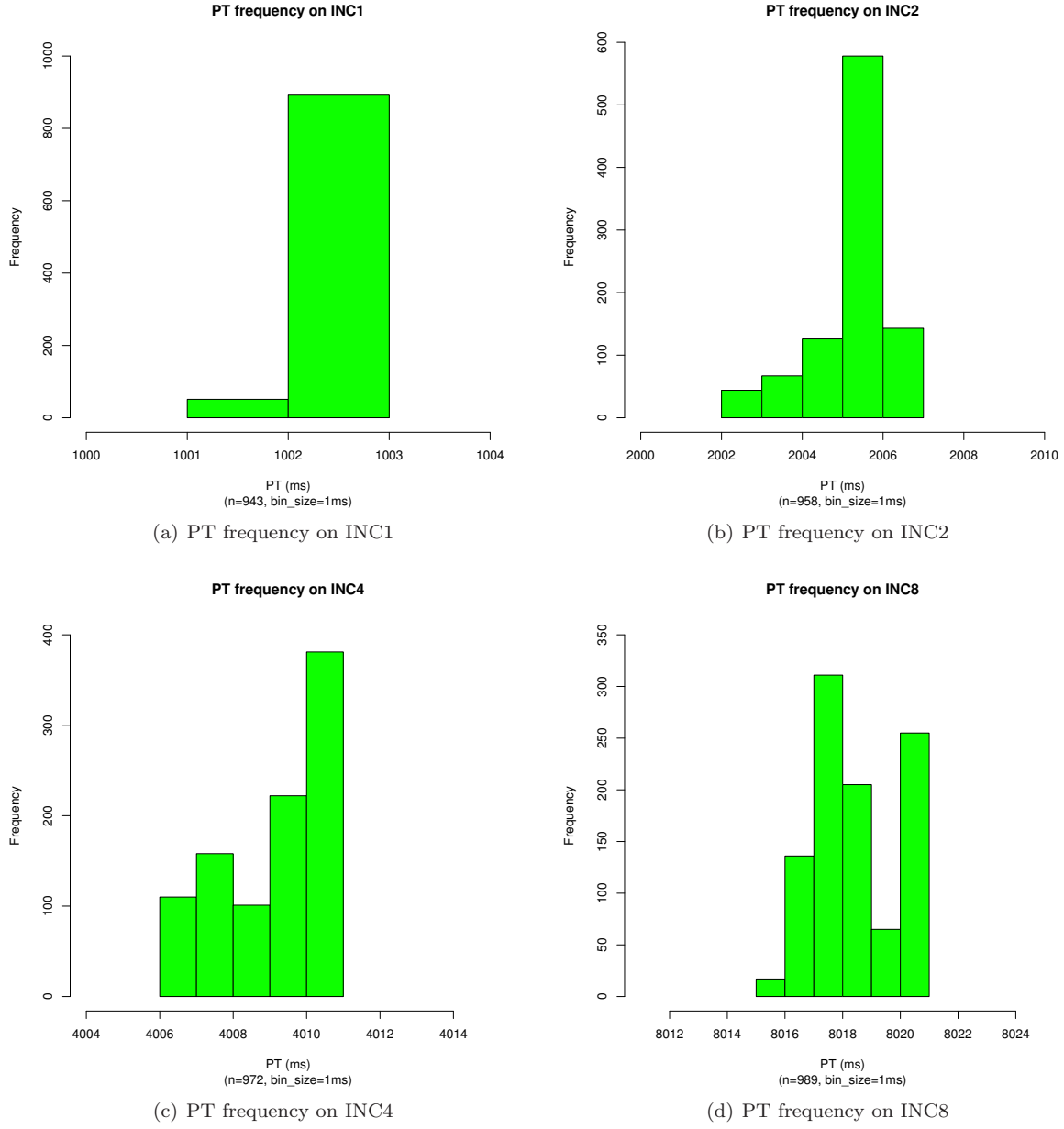
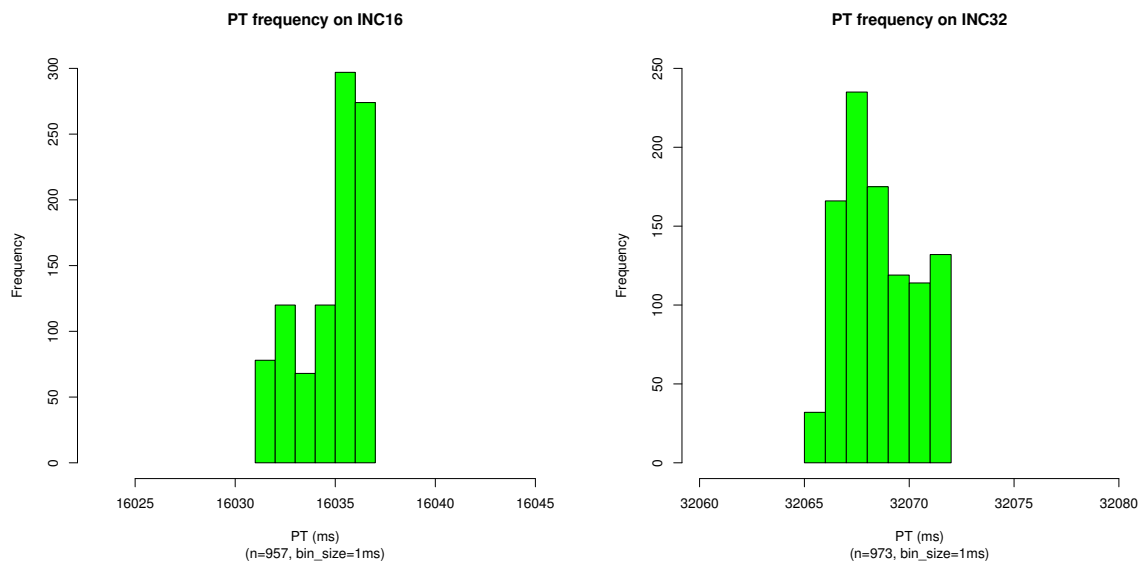
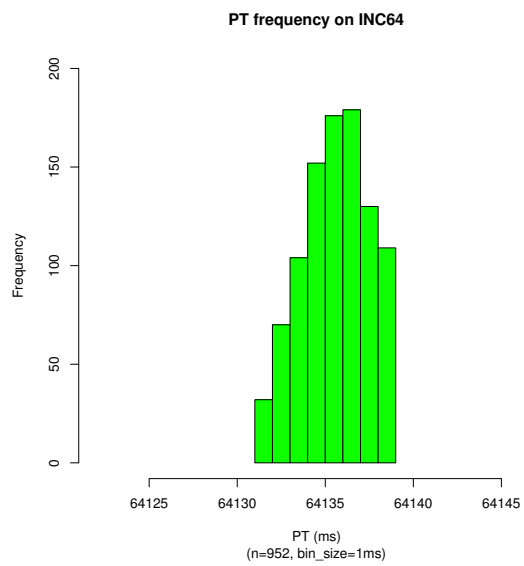


Figure 6: PT Histograms of INC1 ... INC8



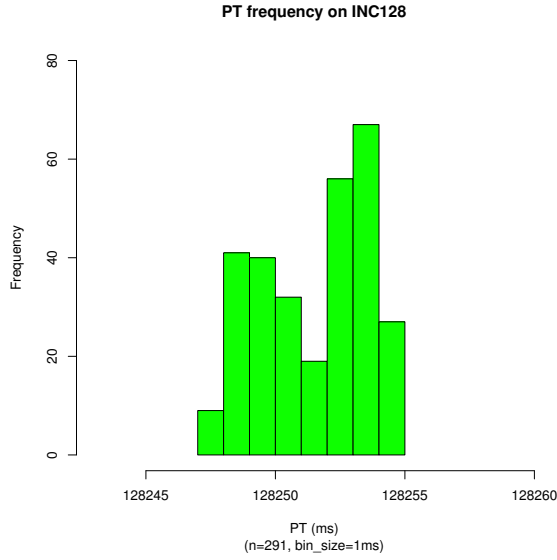
(a) PT frequency on INC16

(b) PT frequency on INC32

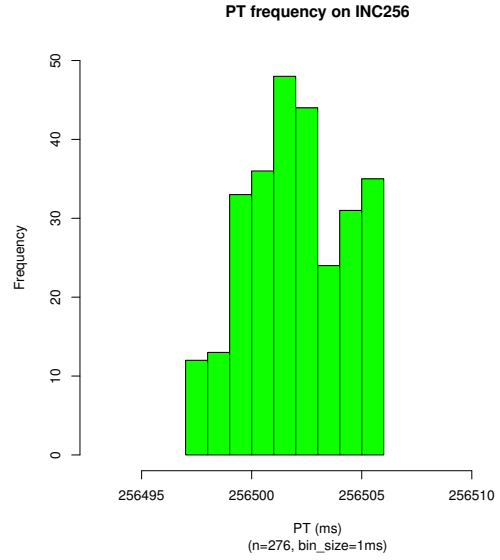


(c) PT frequency on INC64

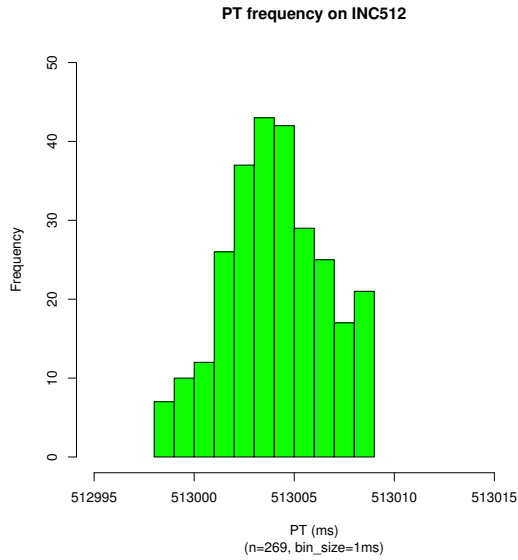
Figure 7: PT Histograms of INC16 ... INC64



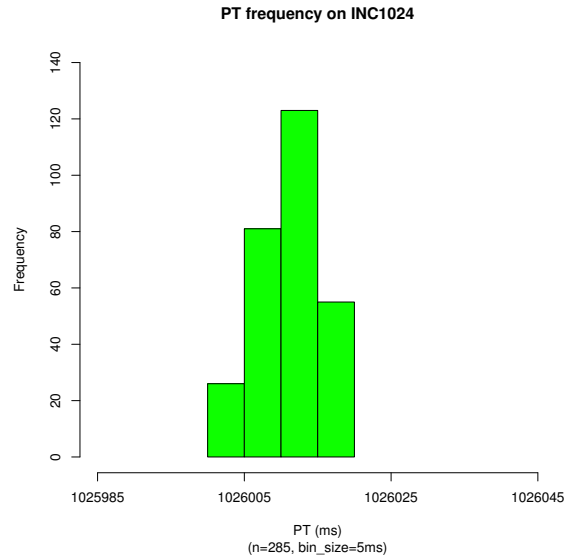
(a) PT frequency on INC128



(b) PT frequency on INC256



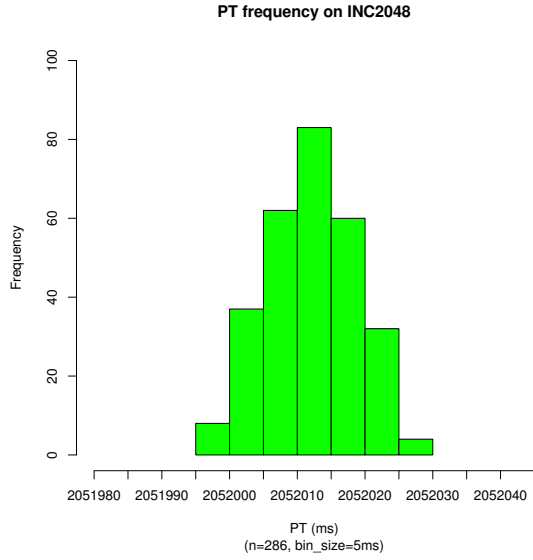
(c) PT frequency on INC512



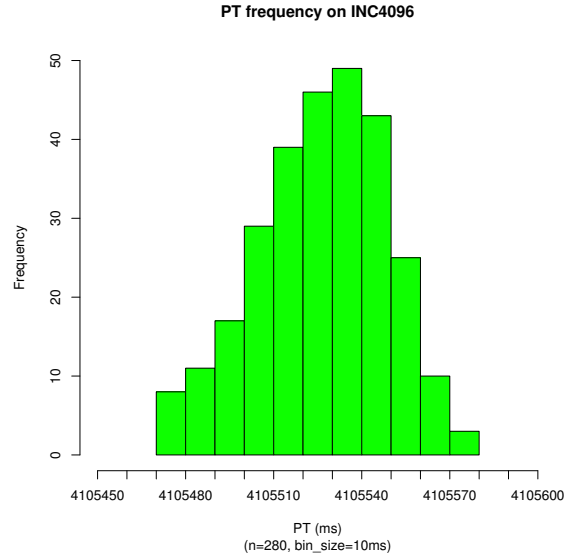
(d) PT frequency on INC1024

Figure 8: PT Histograms of INC128 ... INC1024

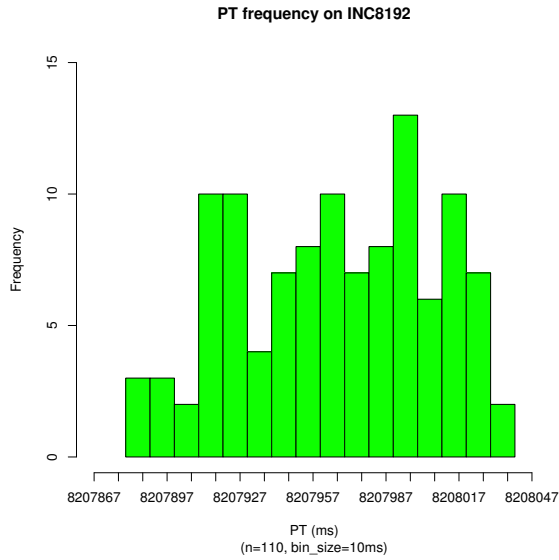




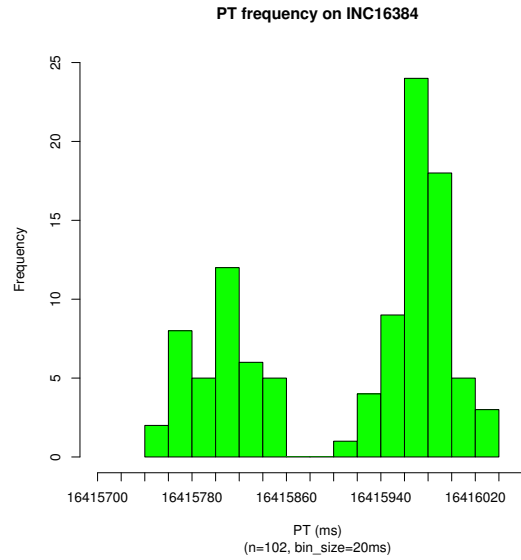
(a) PT frequency on INC2048



(b) PT frequency on INC4096



(c) PT frequency on INC8192



(d) PT frequency on INC16384

Figure 9: PT Histograms of INC2048 ... INC16384