

186.crafty

Datasets profile vs. Reference Dataset

The following are the profiles for the 186.crafty benchmark. For more details about our profile development and dataset reduction methodology, refer to the paper by AJ KleinOsowski and David J. Lilja, "MinneSPEC: A New SPEC Benchmark Workload for Simulation-Based Computer Architecture Research", Computer Architecture Letters, Volume 1, June 2002. This paper is available in electronic form at <http://www.arctic.umn.edu/~lilja/minnespec/index.html>



[http:// www.arctic.umn.edu](http://www.arctic.umn.edu)

Function level execution profile at optimization level O0

The following table contains function execution profiles and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets as compared to the full SPEC reference datasets. This data was gathered with the hiprof profiling utility. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall execution time spent in the stated function (in the Function column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi are the terms of the chi-squared statistic for the stated function (in the function column).

Function	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi
Evaluate	20.20	21.70	0.11	20.50	0.00	20.80	0.02	19.70	0.01	16.70	0.61
abs	8.00	7.40	0.04	7.30	0.06	7.00	0.13	5.40	0.85	7.10	0.10
MakeMove	7.60	6.90	0.06	7.10	0.03	7.40	0.01	6.80	0.08	6.00	0.34
FirstOne	6.60	7.60	0.15	7.40	0.10	6.50	0.00	7.80	0.22	5.30	0.26
UnMakeMove	5.80	5.10	0.08	5.60	0.01	6.30	0.04	6.50	0.08	6.00	0.01
NextMove	5.70	5.50	0.01	3.90	0.57	5.90	0.01	4.50	0.25	1.80	2.67
Search	5.70	5.40	0.02	3.40	0.93	4.50	0.25	3.50	0.85	4.30	0.34
Quiesce	5.40	5.00	0.03	6.50	0.22	6.70	0.31	7.50	0.82	7.50	0.82
Attacked	4.80	4.50	0.02	3.30	0.47	4.40	0.03	3.20	0.53	2.80	0.83
GenerateCaptures	4.60	5.20	0.08	5.30	0.11	6.00	0.43	6.60	0.87	6.80	1.05
Swap	4.40	3.90	0.06	5.50	0.28	6.20	0.74	7.30	1.91	5.00	0.08
EvaluatePawns	4.40	5.70	0.38	7.10	1.66	2.10	1.20	3.80	0.08	5.00	0.08
PopCnt	2.60	4.70	1.70	5.10	2.40	1.20	0.75	1.60	0.38	2.80	0.02
LastOne	2.50	1.90	0.14	2.30	0.02	2.40	0.00	3.10	0.14	2.10	0.06
AttacksTo	2.50	2.10	0.06	2.50	0.00	2.80	0.04	2.70	0.02	3.20	0.20
SwapXray	2.40	1.80	0.15	2.60	0.02	2.90	0.10	3.00	0.15	2.50	0.00
EvaluatePassedPawns	2.30	0.40	1.57	1.10	0.63	2.00	0.04	1.70	0.16	2.10	0.02
LookUp	1.30	1.10	0.03	0.80	0.19	1.00	0.07	0.40	0.62	0.40	0.62
GenerateCheckEvasions	0.90	0.80	0.01	0.20	0.54	0.20	0.54	0.10	0.71	0.00	0.90
GenerateNonCaptures	0.60	0.90	0.15	0.50	0.02	0.70	0.02	0.20	0.27	1.40	1.07
NextEvasion	0.40	0.40	0.00	0.10	0.23	0.00	0.40	0.00	0.40	0.00	0.40
StoreRefutation	0.30	0.30	0.00	0.30	0.00	0.30	0.00	0.10	0.13	0.40	0.03
RepetitionCheck	0.30	0.30	0.00	0.10	0.13	0.10	0.13	0.20	0.03	0.00	0.30
PinnedOnKing	0.30	0.40	0.03	0.20	0.03	0.20	0.03	0.10	0.13	0.00	0.30
ValidMove	0.20	0.20	0.00	0.10	0.05	0.10	0.05	0.20	0.00	0.40	0.20
_OtsDivide64	0.20	0.20	0.00	0.20	0.00	0.20	0.00	0.10	0.05		0.20
StoreBest	0.10	0.10	0.00	0.10	0.00	0.20	0.10	0.20	0.10	0.00	0.10
InterposeSquares	0.10	0.10	0.00	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10
HistoryRefutation	0.10	0.10	0.00	0.10	0.00	0.00	0.10	0.00	0.10	0.00	0.10
AttacksFrom	0.10	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.40	0.90
Sum	100.40	99.80	4.90	99.30	8.79	98.20	5.65	96.40	10.06	90.00	12.71
	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi

90% Confidence level (30 entries) = 39.008

Function level execution profile at optimization level O1

The following table contains function execution profiles and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets as compared to the full SPEC reference datasets. This data was gathered with the hiprof profiling utility. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall execution time spent in the stated function (in the Function column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi are the terms of the chi-squared statistic for the stated function (in the function column).

Function	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi
Evaluate	19.70	19.10	0.02	19.60	0.00	21.20	0.11	19.10	0.02	14.90	1.17
abs	10.40	8.90	0.22	9.00	0.19	9.60	0.06	7.80	0.65	6.50	1.46
FirstOne	8.90	10.70	0.36	11.70	0.88	9.10	0.00	8.40	0.03	7.50	0.22
MakeMove	5.60	5.40	0.01	5.00	0.06	5.90	0.02	5.40	0.01	4.50	0.22
Search	5.50	6.30	0.12	3.70	0.59	4.80	0.09	3.10	1.05	5.00	0.05
Quiesce	5.00	4.50	0.05	5.70	0.10	5.30	0.02	6.50	0.45	4.50	0.05
UnMakeMove	4.80	4.30	0.05	4.10	0.10	5.20	0.03	5.70	0.17	5.50	0.10
GenerateCaptures	4.50	5.10	0.08	5.70	0.32	5.40	0.18	6.40	0.80	6.00	0.50
NextMove	4.50	4.20	0.02	3.10	0.44	4.40	0.00	4.80	0.02	2.00	1.39
Attacked	4.40	4.20	0.01	3.20	0.33	2.90	0.51	2.50	0.82	3.00	0.45
EvaluatePawns	4.20	6.10	0.86	6.30	1.05	2.40	0.77	3.90	0.02	5.50	0.40
Swap	3.80	3.60	0.01	4.60	0.17	5.60	0.85	5.30	0.59	7.50	3.60
SwapXray	3.30	2.60	0.15	3.90	0.11	4.60	0.51	6.50	3.10	3.50	0.01
LastOne	3.00	2.50	0.08	2.80	0.01	3.80	0.21	3.10	0.00	3.00	0.00
PopCnt	3.00	5.50	2.08	5.20	1.61	1.20	1.08	1.70	0.56	2.50	0.08
EvaluatePassedPawns	2.90	0.60	1.82	1.40	0.78	1.80	0.42	1.40	0.78	1.00	1.24
AttacksTo	2.10	1.70	0.08	2.00	0.00	1.80	0.04	2.20	0.00	2.50	0.08
LookUp	1.00	1.10	0.01	0.70	0.09	1.10	0.01	0.60	0.16	0.00	1.00
GenerateCheckEvasions	0.80	0.70	0.01	0.20	0.45	0.20	0.45	0.50	0.11	0.00	0.80
NextEvasion	0.50	0.50	0.00	0.20	0.18	0.20	0.18	0.20	0.18	0.00	0.50
GenerateNonCaptures	0.50	0.60	0.02	0.40	0.02	0.60	0.02	0.30	0.08	0.50	0.00
StoreRefutation	0.50	0.50	0.00	0.50	0.00	0.60	0.02	0.60	0.02	0.00	0.50
RepetitionCheck	0.40	0.40	0.00	0.20	0.10	0.20	0.10	0.30	0.03	0.00	0.40
PinnedOnKing	0.20	0.30	0.05	0.10	0.05	0.10	0.05	0.00	0.20	0.00	0.20
HistoryRefutation	0.20	0.10	0.05	0.10	0.05	0.10	0.05	0.20	0.00	0.00	0.20
ValidMove	0.20	0.20	0.00	0.10	0.05	0.20	0.00	0.00	0.20	0.00	0.20
StoreBest	0.10	0.20	0.10	0.10	0.00	0.20	0.10	0.00	0.10	0.00	0.10
InterposeSquares	0.10	0.10	0.00	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10
AttacksFrom	0.10	0.10	0.00	0.10	0.00	0.00	0.10	0.00	0.10	0.00	0.10
Sum	100.20	100.10	6.26	99.70	7.83	98.50	6.10	96.50	10.35	85.40	15.12
	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi

90% Confidence level (29 entries) = 37.916

Function level execution profile at optimization level O2

The following table contains function execution profiles and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets as compared to the full SPEC reference datasets. This data was gathered with the hiprof profiling utility. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall execution time spent in the stated function (in the Function column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi are the terms of the chi-squared statistic for the stated function (in the function column).

Function	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi
Evaluate	20.20	19.60	0.02	20.10	0.00	18.80	0.10	17.50	0.36	11.30	3.92
FirstOne	9.60	8.90	0.05	10.60	0.10	8.60	0.10	8.80	0.07	7.20	0.60
NextMove	6.50	6.40	0.00	4.90	0.39	6.20	0.01	5.10	0.30	5.10	0.30
MakeMove	6.30	6.10	0.01	6.70	0.03	7.70	0.31	6.80	0.04	7.20	0.13
Search	6.00	6.40	0.03	4.70	0.28	6.00	0.00	4.30	0.48	5.10	0.14
Attacked	5.90	5.90	0.00	4.20	0.49	5.50	0.03	4.10	0.55	2.10	2.45
Swap	5.80	5.60	0.01	6.40	0.06	7.50	0.50	8.40	1.17	8.20	0.99
GenerateCaptures	5.00	5.50	0.05	5.90	0.16	6.90	0.72	6.90	0.72	9.70	4.42
UnMakeMove	5.00	4.70	0.02	4.60	0.03	5.70	0.10	6.30	0.34	4.10	0.16
EvaluatePawns	4.70	6.70	0.85	7.40	1.55	2.40	1.13	3.30	0.42	4.10	0.08
Quiesce	4.50	3.80	0.11	4.60	0.00	5.70	0.32	4.60	0.00	4.60	0.00
PopCnt	3.90	7.10	2.63	6.70	2.01	1.80	1.13	3.80	0.00	3.60	0.02
LastOne	3.40	2.70	0.14	3.00	0.05	3.40	0.00	4.00	0.11	2.60	0.19
SwapXray	3.30	2.40	0.25	3.60	0.03	3.50	0.01	4.50	0.44	6.20	2.55
EvaluatePassedPawns	2.90	0.70	1.67	1.40	0.78	2.00	0.28	0.80	1.52	1.50	0.68
AttacksTo	2.30	2.40	0.00	2.10	0.02	3.30	0.43	2.30	0.00	2.10	0.02
LookUp	1.00	1.20	0.04	0.70	0.09	0.90	0.01	1.00	0.00	0.00	1.00
GenerateCheckEvasions	0.80	0.80	0.00	0.20	0.45	0.10	0.61	0.30	0.31	0.50	0.11
GenerateNonCaptures	0.70	0.70	0.00	0.40	0.13	0.50	0.06	0.70	0.00	0.00	0.70
RepetitionCheck	0.50	0.50	0.00	0.30	0.08	0.10	0.32	0.50	0.00	0.50	0.00
StoreRefutation	0.40	0.50	0.03	0.40	0.00	0.50	0.03	0.70	0.23	0.50	0.03
NextEvasion	0.30	0.30	0.00	0.00	0.30	0.20	0.03	0.00	0.30	0.00	0.30
PinnedOnKing	0.30	0.50	0.13	0.20	0.03	0.10	0.13	0.20	0.03	0.00	0.30
ValidMove	0.20	0.20	0.00	0.10	0.05	0.40	0.20	0.00	0.20	0.00	0.20
StoreBest	0.10	0.20	0.10	0.10	0.00	0.20	0.10	0.00	0.10	0.00	0.10
HistoryRefutation	0.10	0.10	0.00	0.00	0.10	0.20	0.10	0.00	0.10	0.00	0.10
InterposeSquares	0.10	0.10	0.00	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10
AttacksFrom	0.10	0.10	0.00	0.00	0.10	0.20	0.10	0.20	0.10	0.00	0.10
Sum	99.90	100.10	6.13	99.30	7.41	98.40	6.97	95.10	7.98	86.20	19.68
	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi

90% Confidence level (28 entries) = 36.741

Function level execution profile at optimization level O3

The following table contains function execution profiles and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets as compared to the full SPEC reference datasets. This data was gathered with the hiprof profiling utility. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall execution time spent in the stated function (in the Function column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi are the terms of the chi-squared statistic for the stated function (in the function column).

Function	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi
Evaluate	21.20	18.80	0.27	18.40	0.37	17.40	0.68	15.60	1.48	16.50	1.04
FirstOne	10.30	11.40	0.12	11.60	0.16	11.40	0.12	11.50	0.14	10.20	0.00
MakeMove	6.90	7.10	0.01	7.20	0.01	9.20	0.77	7.10	0.01	5.70	0.21
UnMakeMove	6.50	5.40	0.19	6.00	0.04	7.90	0.30	6.80	0.01	4.50	0.62
Search	5.60	5.60	0.00	3.70	0.64	5.00	0.06	4.80	0.11	1.70	2.72
Attacked	5.10	5.00	0.00	3.50	0.50	5.20	0.00	4.60	0.05	2.30	1.54
NextMove	5.10	4.90	0.01	3.70	0.38	3.30	0.64	5.10	0.00	4.00	0.24
EvaluatePawns	4.70	8.10	2.46	8.50	3.07	2.50	1.03	4.00	0.10	3.40	0.36
Swap	4.60	4.40	0.01	5.50	0.18	6.10	0.49	8.40	3.14	7.40	1.70
Quiesce	4.50	3.90	0.08	4.70	0.01	5.50	0.22	4.20	0.02	5.70	0.32
GenerateCaptures	4.50	5.10	0.08	5.70	0.32	6.10	0.57	6.80	1.18	6.80	1.18
PopCnt	3.30	6.30	2.73	6.70	3.50	1.50	0.98	1.80	0.68	4.50	0.44
EvaluatePassedPawns	3.20	0.60	2.11	1.70	0.70	2.00	0.45	1.30	1.13	1.70	0.70
SwapXray	3.20	2.60	0.11	3.60	0.05	3.80	0.11	4.00	0.20	5.70	1.95
LastOne	3.10	2.60	0.08	3.50	0.05	3.80	0.16	3.80	0.16	1.10	1.29
AttacksTo	3.10	3.00	0.00	2.90	0.01	3.00	0.00	2.20	0.26	2.80	0.03
LookUp	1.00	1.10	0.01	0.70	0.09	0.90	0.01	1.50	0.25	0.60	0.16
RepetitionCheck	0.90	0.90	0.00	0.60	0.10	0.90	0.00	0.50	0.18	1.70	0.71
GenerateCheckEvasions	0.80	0.80	0.00	0.20	0.45	0.30	0.31	0.20	0.45	0.00	0.80
GenerateNonCaptures	0.50	0.60	0.02	0.40	0.02	0.90	0.32	0.70	0.08	0.60	0.02
NextEvasion	0.40	0.40	0.00	0.10	0.23	0.00	0.40	0.40	0.00	0.00	0.40
StoreRefutation	0.40	0.40	0.00	0.30	0.03	0.20	0.10	0.70	0.23	0.00	0.40
PinnedOnKing	0.30	0.40	0.03	0.10	0.13	0.10	0.13	0.00	0.30	0.00	0.30
ValidMove	0.20	0.20	0.00	0.10	0.05	0.30	0.05	0.00	0.20	0.00	0.20
InterposeSquares	0.10	0.10	0.00	0.00	0.10	0.10	0.00	0.00	0.10	0.00	0.10
StoreBest	0.10	0.20	0.10	0.10	0.00	0.20	0.10	0.00	0.10	0.00	0.10
HistoryRefutation	0.10	0.10	0.00	0.10	0.00	0.00	0.10	0.20	0.10	0.00	0.10
AttacksFrom	0.10	0.10	0.00	0.00	0.10	0.20	0.10	0.00	0.10	0.00	0.10
EvaluatePassedPawnRaces	0.10	0.00	0.10								
Sum	99.90	100.10	8.52	99.60	11.31	97.80	8.21	96.20	10.75	86.90	17.72
	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi

90% Confidence level (29 entries) = 37.916

Function level execution profile at optimization level O4

The following table contains function execution profiles and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets as compared to the full SPEC reference datasets. This data was gathered with the hiprof profiling utility. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall execution time spent in the stated function (in the Function column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi are the terms of the chi-squared statistic for the stated function (in the function column).

Function	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi
Evaluate	20.00	18.90	0.06	19.60	0.01	18.10	0.18	15.80	0.88	13.80	1.92
FirstOne	10.30	11.20	0.08	10.50	0.00	9.30	0.10	12.80	0.61	14.40	1.63
MakeMove	7.50	7.30	0.01	7.60	0.00	8.00	0.03	8.00	0.03	6.60	0.11
UnMakeMove	6.70	5.80	0.12	6.90	0.01	7.70	0.15	5.00	0.43	4.80	0.54
Search	6.10	6.20	0.00	4.40	0.47	5.10	0.16	6.00	0.00	4.80	0.28
Attacked	5.30	5.00	0.02	3.40	0.68	3.80	0.42	1.80	2.31	1.80	2.31
EvaluatePawns	5.20	7.70	1.20	8.70	2.36	3.80	0.38	4.20	0.19	3.00	0.93
NextMove	5.20	5.00	0.01	3.60	0.49	5.10	0.00	3.80	0.38	3.60	0.49
Quiesce	4.90	4.30	0.07	5.10	0.01	7.50	1.38	6.80	0.74	7.20	1.08
Swap	4.40	4.30	0.00	5.70	0.38	5.90	0.51	8.60	4.01	6.00	0.58
GenerateCaptures	4.30	4.70	0.04	4.50	0.01	5.40	0.28	5.80	0.52	3.00	0.39
PopCnt	3.40	6.60	3.01	5.90	1.84	1.80	0.75	2.40	0.29	6.00	1.99
LastOne	3.30	2.60	0.15	3.10	0.01	4.00	0.15	3.80	0.08	3.60	0.03
SwapXray	3.10	2.60	0.08	3.50	0.05	3.40	0.03	4.00	0.26	8.40	9.06
EvaluatePassedPawns	3.00	0.60	1.92	1.60	0.65	3.50	0.08	1.60	0.65	0.00	3.00
AttacksTo	2.80	2.00	0.23	2.60	0.01	2.50	0.03	1.60	0.51	2.40	0.06
LookUp	1.00	1.10	0.01	0.80	0.04	0.90	0.01	0.80	0.04	0.00	1.00
GenerateCheckEvasions	0.80	0.80	0.00	0.30	0.31	0.10	0.61	0.00	0.80	0.00	0.80
GenerateNonCaptures	0.60	0.80	0.07	0.50	0.02	0.50	0.02	0.20	0.27	0.00	0.60
NextEvasion	0.50	0.40	0.02	0.20	0.18	0.00	0.50	0.60	0.02	0.00	0.50
RepetitionCheck	0.40	0.40	0.00	0.30	0.03	0.20	0.10	0.20	0.10	0.00	0.40
StoreRefutation	0.40	0.50	0.03	0.30	0.03	0.50	0.03	1.00	0.90	0.60	0.10
StoreBest	0.20	0.20	0.00	0.20	0.00	0.20	0.00	0.40	0.20	0.00	0.20
PinnedOnKing	0.20	0.30	0.05	0.10	0.05	0.10	0.05	0.00	0.20	0.00	0.20
HistoryRefutation	0.20	0.20	0.00	0.10	0.05	0.10	0.05	0.00	0.20	0.00	0.20
ValidMove	0.20	0.20	0.00	0.10	0.05	0.20	0.00	0.00	0.20	0.00	0.20
InterposeSquares	0.10	0.10	0.00	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10
AttacksFrom	0.10	0.10	0.00	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10
Sum	100.20	99.90	7.17	99.60	7.94	97.70	6.21	95.20	15.03	90.00	28.80
	Ref	Train	Train Chi	Test	Test Chi	LgRed	LgRed Chi	MdRed	MdRed Chi	SmRed	SmRed Chi

90% Confidence level (28 entries) = 36.741

Instruction Mix profile at optimization level o0

The following table contains instruction mix breakdown and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets, as compared to the full SPEC dataset. This data was gathered with the sim-profile simulator for the SimpleScalar suite. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall instructions of the stated instruction type (in the Inst Type column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi columns are the terms of the chi-squared statistic for the stated instruction type (in the Inst Type column).

186.crafty

O0 program

Inst type	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi
load	25.05	24.69	0.01	24.62	0.01	25.45	0.01	25.11	0.00	23.89	0.05
store	5.63	5.39	0.01	5.40	0.01	6.10	0.04	5.99	0.02	5.61	0.00
unconditional											
branch	4.69	5.05	0.03	5.03	0.02	4.42	0.02	4.53	0.01	4.82	0.00
conditional branch	7.66	7.87	0.01	7.88	0.01	7.34	0.01	7.38	0.01	7.75	0.00
int computation	56.97	57.00	0.00	57.07	0.00	56.70	0.00	56.99	0.00	57.93	0.02
fp computation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
trap	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	100.02	100.00	0.05	100.00	0.05	100.01	0.08	100.00	0.04	100.00	0.07
	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi

90% Confidence level (7 entries) = 10.645

186.crafty

Instruction Mix profile at optimization level o1

The following table contains instruction mix breakdown and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets, as compared to the full SPEC dataset. This data was gathered with the sim-profile simulator for the SimpleScalar suite. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall instructions of the stated instruction type (in the Inst Type column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi columns are the terms of the chi-squared statistic for the stated instruction type (in the Inst Type column).

186.crafty

O1 program

Inst type	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi
load	29.13	29.48	0.00	29.27	0.00	29.15	0.00	28.84	0.00	27.80	0.06
store	6.47	6.44	0.00	6.45	0.00	6.98	0.04	6.93	0.03	6.67	0.01
unconditional branch	3.80	3.85	0.00	3.94	0.01	3.63	0.01	3.68	0.00	3.75	0.00
conditional branch	7.29	7.54	0.01	7.57	0.01	7.29	0.00	7.51	0.01	8.03	0.08
int computation	53.31	52.69	0.01	52.78	0.01	52.95	0.00	53.04	0.00	53.75	0.00
fp computation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
trap	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	100.00	100.00	0.02	100.01	0.02	100.00	0.05	100.00	0.05	100.00	0.15
	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi

90% Confidence level (7 entries) = 10.645

186.crafty

Instruction Mix profile at optimization level o2

The following table contains instruction mix breakdown and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets, as compared to the full SPEC dataset. This data was gathered with the sim-profile simulator for the SimpleScalar suite. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall instructions of the stated instruction type (in the Inst Type column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi columns are the terms of the chi-squared statistic for the stated instruction type (in the Inst Type column).

186.crafty

O2 program

Inst type	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi
load	28.87	29.05	0.00	28.90	0.00	28.86	0.00	28.53	0.00	27.52	0.06
store	6.23	6.08	0.00	6.19	0.00	6.70	0.04	6.67	0.03	6.41	0.01
unconditional branch	2.81	3.02	0.02	3.07	0.02	2.82	0.00	2.91	0.00	2.92	0.00
conditional branch	7.64	7.82	0.00	7.89	0.01	7.56	0.00	7.75	0.00	8.22	0.04
int computation	54.45	54.02	0.00	53.94	0.00	54.06	0.00	54.13	0.00	54.91	0.00
fp computation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
trap	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	100.00	99.99	0.03	99.99	0.04	100.00	0.04	99.99	0.04	99.98	0.12
	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi

90% Confidence level (7 entries) = 10.645

186.crafty

Instruction Mix profile at optimization level o3

The following table contains instruction mix breakdown and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets, as compared to the full SPEC dataset. This data was gathered with the sim-profile simulator for the SimpleScalar suite. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall instructions of the stated instruction type (in the Inst Type column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi columns are the terms of the chi-squared statistic for the stated instruction type (in the Inst Type column).

186.crafty

O3 program

Inst type	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi
load	27.81	27.94	0.00	27.82	0.00	27.86	0.00	27.58	0.00	26.59	0.05
store	6.27	6.12	0.00	6.24	0.00	6.76	0.04	6.73	0.03	6.46	0.01
unconditional branch	2.83	3.04	0.02	3.09	0.02	2.84	0.00	2.94	0.00	2.95	0.01
conditional branch	7.69	7.87	0.00	7.94	0.01	7.62	0.00	7.82	0.00	8.30	0.05
int computation	55.40	55.05	0.00	54.91	0.00	54.91	0.00	54.94	0.00	55.70	0.00
fp computation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
trap	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	100.00	100.02	0.03	100.00	0.04	99.99	0.04	100.01	0.05	100.00	0.11
	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi

90% Confidence level (7 entries) = 10.645

186.crafty

Instruction Mix profile at optimization level o4

The following table contains instruction mix breakdown and goodness-of-fit chi-squared statistic values for the train, test, large (LgRed), medium (MdRed), and small (SmRed) reduced datasets, as compared to the full SPEC dataset. This data was gathered with the sim-profile simulator for the SimpleScalar suite. *90% Conf = Critical value of the chi-squared statistic at the 90 percent confidence level. Numbers in the Ref, Train, Test, LgRed, MdRed, and SmRed columns are the percent of overall instructions of the stated instruction type (in the Inst Type column). Numbers in the Train Chi, Test Chi, LgRed Chi, MdRed Chi, and SmRed Chi columns are the terms of the chi-squared statistic for the stated instruction type (in the Inst Type column).

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O4 program

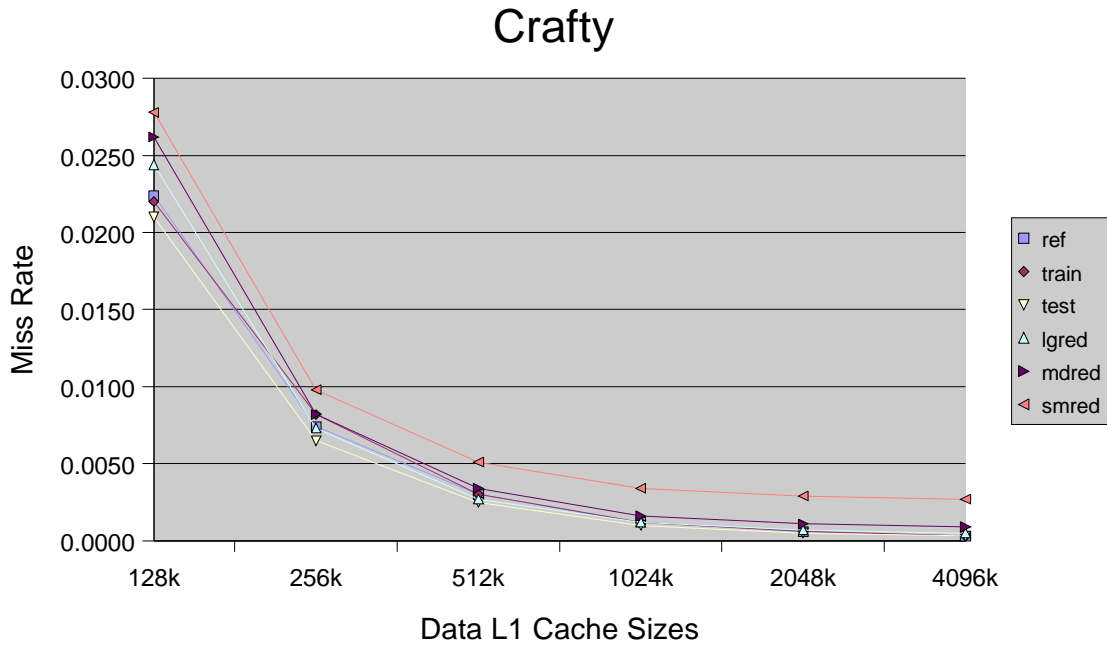
Inst type	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi
load	29.62	29.72	0.00	29.58	0.00	29.65	0.00	29.32	0.00	28.32	0.06
store	6.01	5.87	0.00	5.99	0.00	6.49	0.04	6.47	0.04	6.22	0.01
unconditional branch	2.71	2.91	0.01	2.97	0.02	2.73	0.00	2.83	0.01	2.86	0.01
conditional branch	7.38	7.55	0.00	7.63	0.01	7.33	0.00	7.53	0.00	8.02	0.06
int computation	54.28	53.95	0.00	53.83	0.00	53.79	0.00	53.84	0.00	54.58	0.00
fp computation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
trap	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	100.00	100.00	0.02	100.00	0.04	99.99	0.04	99.99	0.05	100.00	0.13
	Ref	Train	Train Chi	Test	Test Chi	Lgred	LgRed Chi	Mdred	MdRed Chi	Smred	Smred Chi

90% Confidence level (7 entries) = 10.645

186.crafty

Cache profile

The following chart shows level 1 data cache miss rates for the Ref, Train, Test, LgRed, MdRed, and SmRed datasets. This data was gathered with the sim-cache simulator from the SimpleScalar suite. Miss rate is stated as the ratio of level 1 misses to total level 1 accesses.



Instruction Counts for all Datasets

The following table shows the instruction counts and estimated simulation time for the reference (Ref), train, test, large (LgRed), medium(MdRed), and small (SmRed) reduced datasets. Instruction counts are from the simulated benchmark, compiled at optimization level O0 and run with each input dataset. Estimated simulation times are calculated using a 45,000 instructions per second factor. This factor was determined by observing the simulation rate of a simulator similar to sim-outorder, run on a machine similar to the SPEC 2000 reference machine (a 333 Mhz Sparc).

	<u>Ref</u>	<u>Train</u>	<u>Test</u>	<u>LgRed</u>	<u>MdRed</u>	<u>SmRed</u>
Instruction Count						
(in millions)	264235	37901	5992	1167	436	141
Simulation Time						
(in hours)	1631.0	234.0	37.0	7.2	2.7	0.9