CENTRAL WASHINGTON UNIVERSITY, DEPARTMENT OF COMPUTER SCIENCE

CS471 Project 1

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6^{th} April, 2018

1 BENCHMARK FUNCTIONS

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$$\begin{aligned}(x+y)^3 &= (x+y)^2(x+y)\\ &= (x^2+2xy+y^2)(x+y)\\ &= (x^3+2x^2y+xy^2)+(x^2y+2xy^2+y^3)\\ &= x^3+3x^2y+3xy^2+y^3\end{aligned} \tag{1.1}$$

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1.1 HEADING ON LEVEL 2 (SUBSECTION)

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$$A = \begin{bmatrix} A_{11} & A_{21} \\ A_{21} & A_{22} \end{bmatrix} \tag{1.2}$$

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1.1.1 Heading on level 3 (subsubsection)

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2 Lists

2.1 Example of list (3*itemize)

- First item in a list
  - First item in a list
    - First item in a list
    - Second item in a list
  - Second item in a list
- Second item in a list

2.2 Example of list (enumerate)

1. First item in a list
2. Second item in a list
3. Third item in a list

Table 2.1: Computation comparison of DE, GA and PSO

Problem	DE					GA					PSO				
	Avg	Median	Range	SD	T(s)	Avg	Median	Range	SD	T(s)	Avg	Median	Range	SD	T(s)
f_1	2.40	0.57	5.36	1.48	0.6	2.34	2.16	2.39	0.08	1	2.38	2.36	2.4	0.02	1
f_2	3.30	2.13	4.48	0.72	1.08	3.25	3.15	3.3	0.06	2	3.29	3.24	3.3	0.02	2
f_3	4.81	0.97	7.45	1.77	2.31	4.15	3.73	4.61	0.28	1.25	4.24	3.88	4.67	0.25	1.25
f_4	6.23	4.86	7.36	0.89	3.54	5.36	4.94	5.83	0.28	2.5	5.75	5.43	6.12	0.23	2.5
f_5	6.62	4.48	8.40	1.42	4.63	5.55	5.25	5.87	0.2	5	6.03	5.74	6.34	0.2	5
f_6	2.24	1.00	3.74	0.95	8.31	0.37	0.03	0.79	0.24	2.5	1.42	1.04	1.86	0.26	2.5
f_7	5.90	4.67	7.94	0.93	17.08	3.9	3.59	4.25	0.21	5	5.17	4.92	5.56	0.21	5
f_8	5.14	4.00	6.01	0.62	28.42	3.62	3.36	3.88	0.16	10	4.68	4.39	5.01	0.19	10
f_9	4.03	2.56	5.49	1.09	195.33	1.29	1.04	1.58	0.17	10	3.09	2.8	3.47	0.2	10
f_{10}	3.99	2.82	4.81	0.66	243.33	2.17	1.99	2.35	0.11	20	3.57	3.31	3.86	0.17	20
f_{11}	3.23	2.53	4.03	0.46	435.34	1.19	1.08	1.34	0.08	50	2.47	2.16	2.78	0.2	50
f_{12}	3.23	2.53	4.03	0.46	435.34	1.19	1.08	1.34	0.08	50	2.47	2.16	2.78	0.2	50
f_{13}	3.23	2.53	4.03	0.46	435.34	1.19	1.08	1.34	0.08	50	2.47	2.16	2.78	0.2	50
f_{14}	3.23	2.53	4.03	0.46	435.34	1.19	1.08	1.34	0.08	50	2.47	2.16	2.78	0.2	50
f_{15}	3.23	2.53	4.03	0.46	435.34	1.19	1.08	1.34	0.08	50	2.47	2.16	2.78	0.2	50
Mean	4.03	2.55	5.57	0.97	78.35	2.79	2.54	3.05	0.16	9.15	3.54	3.3	3.82	0.17	9.15

[1] MacBook Pro, 2.3GHz Intel Core i7 (2nd gen), 8 GB RAM

[2] Pentium P-IV, 3.0 GHz, 512 MB