Project 3 Written Report
Pablo Turriago-Lopez
Jimmy Prohaska III
Jacob Boisseau
Our method is randomly choosing from the 5 most recent additions to m_vertices. If m_vertices has less than 5 vertices then it chooses randomly from the size of m_vertices. Otherwise, it grabs from the last 5 indexes of m_vertices.

Pseudo Code

```
Vid <- vertex index to be returned
M_vertices <- array of vertices

if(){
        Vid = random number from 0 to size(m_vertices)
}
Else{
        Vid = random number from 0 to 5 + (size(m_vertices) - 5)
}
```

The function is lightweight which means that if it has to resort to random it can keep working but at the same time it has the potential to get stuck for a long time in places get stuck. Another problem could be potentially long final paths. The good thing is that it has a tendency to move forward while still keeping itself partly random.

MyApproach	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10
Scene 1	0.001276	0.000433	0.003517	0.000942	0.003763	0.001934	0.002489	0.001080	0.002609	0.001554
Scene 2	0.012851	0.012851	0.001313	0.003263	0.001177	0.001290	0.004959	0.002402	0.004570	0.001218
Scene 3	0.163249	0.047639	0.281021	0.133105	0.041658	0.118097	0.047855	0.073965	0.094272	0.172634
Scene 4	0.554486	0.501652	3.330338	2.083773	4.076822	13.748085	5.868754	1.973927	1.253218	1.075245
Scene 5	0.859326	1.102796	0.174314	0.695832	0.766543	0.586571	0.566658	0.576645	0.810486	0.894051
	Median	Average	Solved %							
Scene 1	0.0014	0.0020	100%							
Scene 2	0.002833	0.0046	100%							
Scene 3	0.1062	0.1173	100%							
Scene 4	2.0289	3.4467	100%							
Scene 5	0.7312	0.6456	100%							

ExtendRandom	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10
Scene 1	0.016439	0.001739	0.009339	0.003186	0.003764	0.007771	0.024266	0.035549	0.003842	0.010118
Scene 2	0.004096	0.012750	0.174173	0.005859	0.052858	0.050006	0.021924	0.008398	0.010417	0.073262
Scene 3	Fail	4.292776	Fail	Fail	9.159726	Fail	Fail	14.547584	Fail	Fail

Scene 4	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail
Scene 5	fail	fail	fail	Fail	fail	fail	Fail	Fail	Fail	Fail
	Median	Average	Solved %							
Scene 1	0.008555	0.0116013	100%							
Scene 2	0.017337	0.0413743	100%							
Scene 3	9.159726	9.333362	30%							
Scene 4	N/A	N/A	0%							
Scene 5	N/A	N/A	0%							

ExtendEST	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10
Scene 1	0.004157	0.001543	0.003272	0.000715	0.000082	0.000731	0.000330	0.000792	0.002785	0.000364
Scene 2	0.001061	0.034190	0.003411	0.006073	0.001165	0.003359	0.000632	0.009744	0.001960	0.028303
Scene 3	2.936888	0.512491	0.018552	4.035985	0.031674	0.878255	0.141736	0.160598	0.076049	0.146634
Scene 4	40.731502	79.779446	33.285019	fail	3.352789	72.386053	fail	fail	15.519977	14.171485
Scene 5	24.501830	1.669747	2.153597	4.359079	13.648279	11.260483	1.428157	31.928807	0.932330	7.534641
	Median	Average	Solved %							

Scene 1	0.000761 5	0.0014 8	100%							
Scene 2	0.003385	0.0089 8	100%							
Scene 3	0.1536	0.8938 8	100%							
Scene 4	37.03	37.032 3	70%							
Scene 5	5.9468	9.9416	100%							

ExtendRRT	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10
Scene 1	0.001162	0.001494	0.001387	0.000502	0.005250	0.000169	0.003508	0.001172	0.000968	0.001097
Scene 2	0.001425	0.001216	0.000692	0.002960	0.004733	0.001134	0.000253	0.000407	0.003509	0.002179
Scene 3	0.071460	0.114986	0.142114	0.011925	0.005707	0.011141	0.063792	0.001861	0.003494	0.213317
Scene 4	14.605666	1.206345	3.742988	2.057889	1.999695	0.251401	4.090099	0.140424	1.531260	0.048245
Scene 5	2.821053	0.005387	0.209509	0.032283	0.302086	1.828536	1.223186	4.079291	3.283810	0.134138
	Median	Average	Solved %							
Scene 1	0.001167	0.0016709	100%							
Scene 2	0.001320 5	0.0018508	100%							

Scene 3	0.0378585	0.0639797	100%							
Scene 4	1.7654775	2.9674012	100%							
Scene 5	0.762636	1.3919279	100%							