

作品集

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1 Master's thesis (2017)

Programming Languages C++

Keywords QT / Open GL / Open CV / CPLEX Optimizer / Genetic Algorithm / Particle Swarm Optimization / Hungarian Algorithm

Demo Video <https://youtu.be/IYPuwhHu6sA>

Description 輸入單張影像與樣板模型，半自動將樣板模型與影像中物體進行匹配，並自動計算出貼圖，產生一個 3D 場景。因為論文內容較多，指導教授預計將本論文分為兩篇 paper 投至 IEEE TVCG 等期刊，目前還在準備投稿中。

Title 3D Scene Reconstruction from a Single Image with Duplicate Objects Using Template Models

Advisor Dr. Tong-Yee Lee

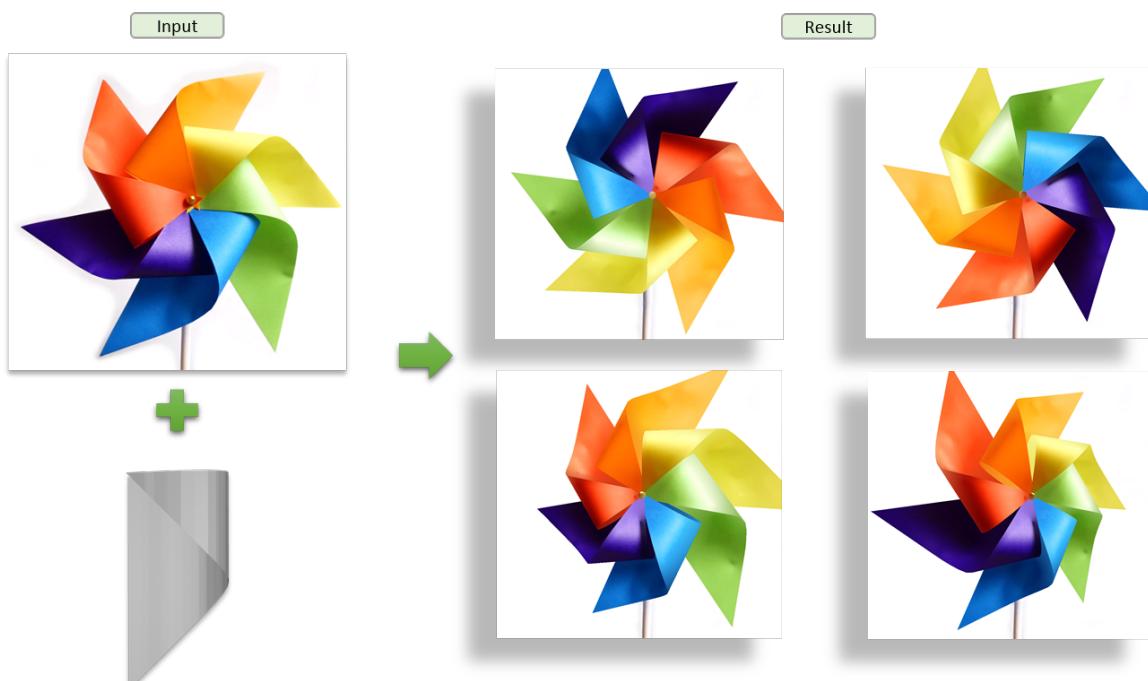
Abstract Many applications, such as virtual reality, computer games, physics simulations, and medical applications, use 3D scenes. Reconstructing 3D scenes from 2D images is common and can be done in one of two ways: (1) from multiple images and (2) from a single image. While many well-developed methods exist for 3D reconstruction from multiple images, a lack of essential information means that 3D reconstruction from single images remains a challenge.

We propose a method for reconstructing 3D scenes from a single image under two conditions. To complete the shapes of the objects in the reconstructed scene, we need the first condition: 3D template models similar to objects in the input image are available. To synthesize a complete texture, we need the second condition: the input image contains duplicate objects; these objects are repeated in slightly different directions. For example, take an image of a lotus, which has many similar petals that lie in slightly different directions. We can reconstruct the 3D scene from this image if we find a 3D model of a petal from the Internet and synthesize the texture of each petal by considering information from other petals.

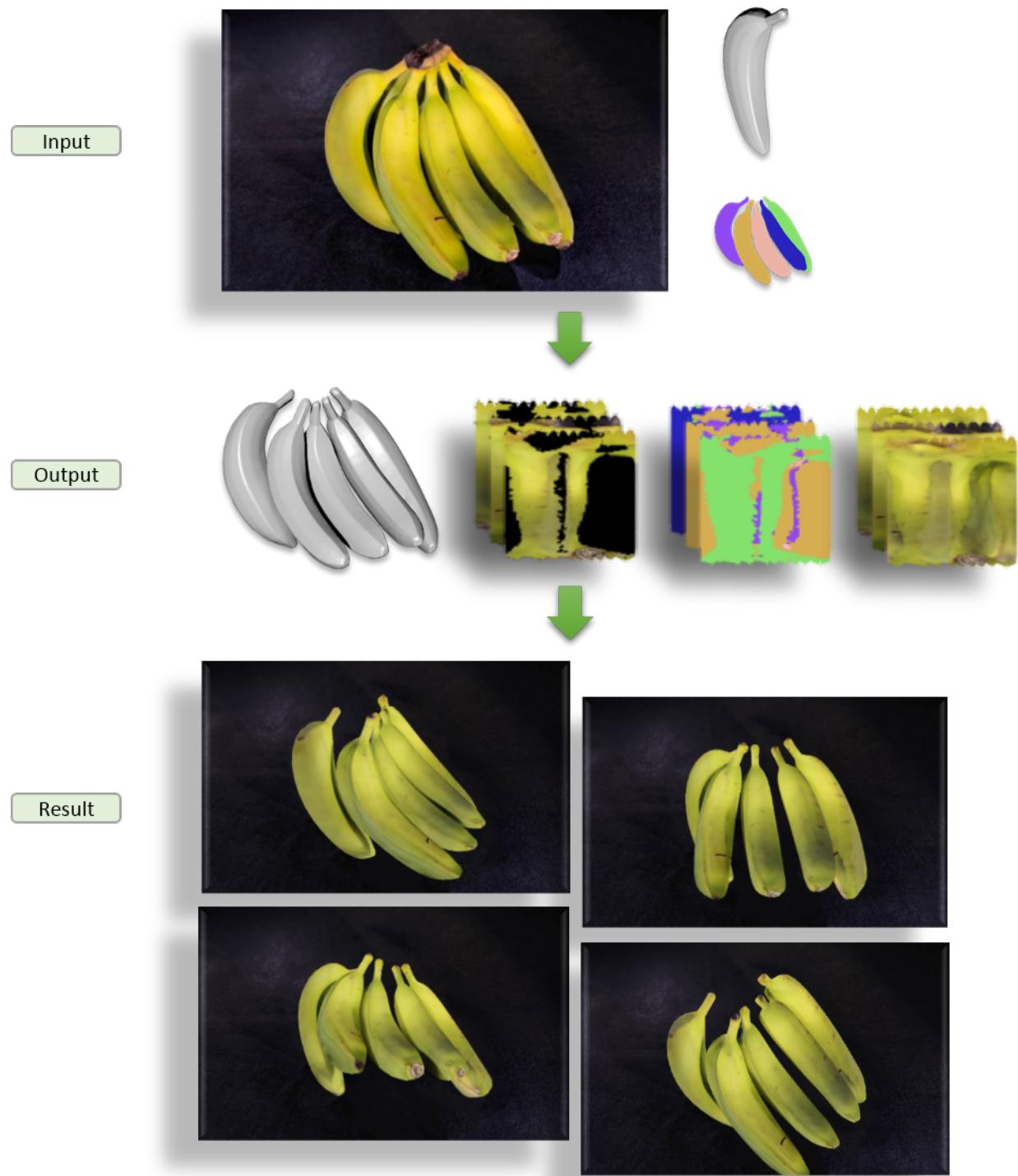
In the present study, we use template models to reconstruct 3D scenes because 3D model files are now more publicly available on the Internet than in the past.

The entire work is divided into three sub-problems: (1) model fitting, (2) mesh deformation, and (3) texture synthesis. We can reconstruct the 3D scene after resolving these problems.

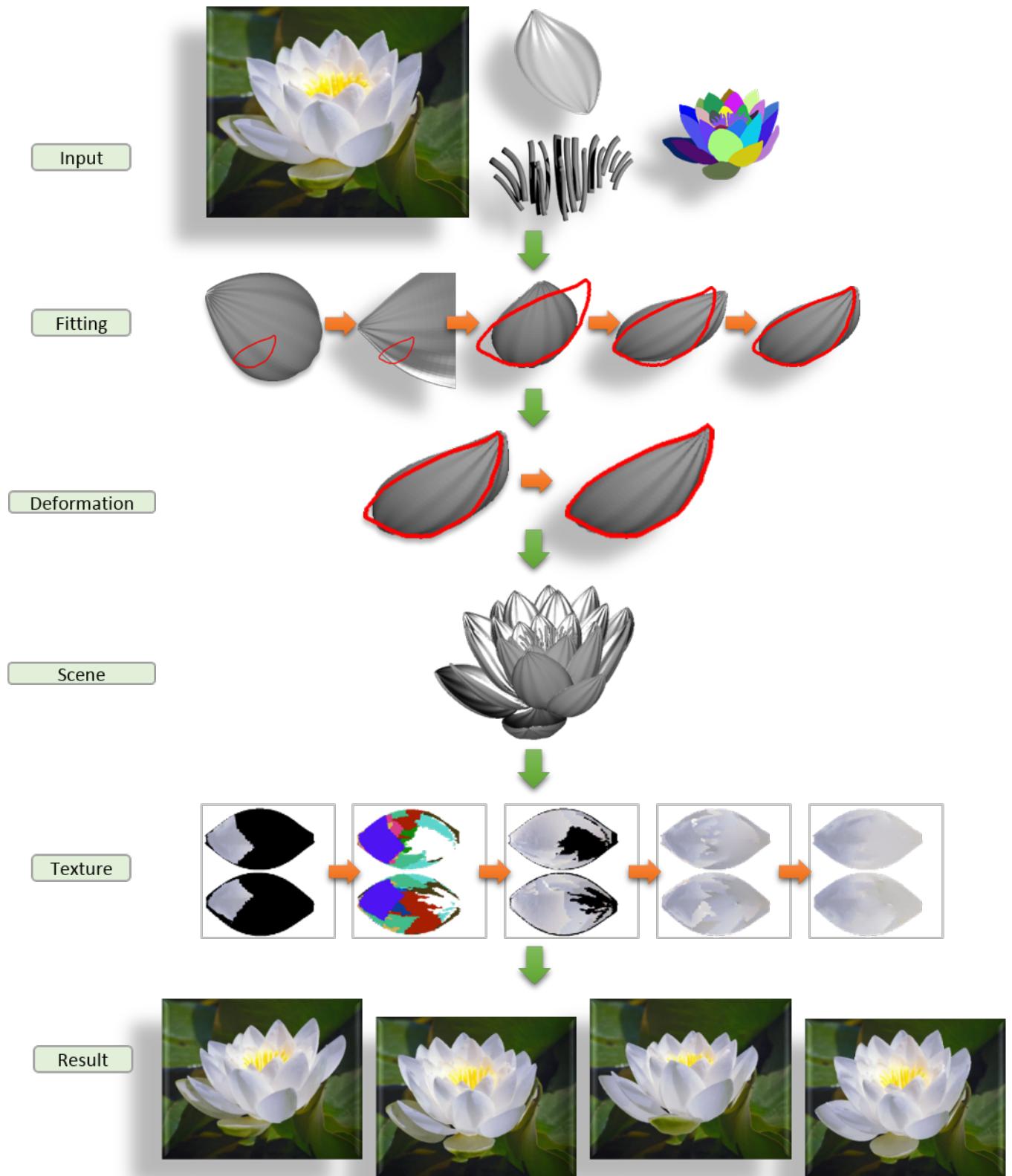
Thesis Keywords 3D reconstruction, single image reconstruction, model fitting, mesh deformation, texture synthesis



1.1 System Overview



1.2 Method Overview



2 Stock Tools (2016)

Programming Languages C++ / Python

Keywords CPLEX Optimizer / Selenium / Web Crawler

Description 使用 Python 自動從 TWSE 網站抓取法人進出，並根據進出情形，使用 C++ 進行最佳化，估算股票未來的漲跌。此外，也使用 selenium 在某些較難讀取的動態網頁，抓取特定分點的進出資訊。

id	A	B	C	D	E	F	G	H	I	J	K	L
0050	71.75	2329	4486	71.62	71.62	2064	55	2214	71.45	71.75	71.3	g
0056	25.07	551	562	25.05	25.06	0	0	30	25	25.07	25	
00632R	16.33	25002	10223	16.36	16.35	-11226	0	-20219	16.4	16.44	16.33	
1101	35.95	3913	3890	35.91	35.9	-1074	0	-43	36.2	36.2	35.65	
1102	27.5	826	782	27.54	27.53	-109	0	1	27.6	27.65	27.45	
1103	9.08	209	224	9.07	9.07	80	0	15	8.96	9.09	8.96	
1104	26.05	581	611	25.77	25.74	18	22	-3	25.1	26.1	25	
1108	9.21	89	89	9.21	9.21	-39	0	0	9.2	9.24	9.2	
1109	10.2	13	13	10.15	10.15	0	0	0	10.15	10.2	10.15	
1110	15.4	20	20	15.37	15.37	-7	0	0	15.35	15.4	15.35	
1201	17.5	321	352	17.47	17.47	-157	0	0	17.6	17.6	17.4	
1203	22	91	91	22	22	3	0	0	21.95	22.1	21.95	
1210	27.25	468	429	27.19	27.18	33	0	-56	27.25	27.35	27.1	
1213	15.1	31	31	15.13	15.1	12	0	0	15	15.15	15	
1215	37.85	190	177	37.82	37.83	88	0	-13	37.5	37.95	37.5	
1216	61.7	10909	9758	61.29	61.28	5897	0	96	60.5	61.7	60.4	
1217	7.86	154	159	7.85	7.86	12	0	0	7.9	7.9	7.84	
1218	17.55	2185	2119	17.64	17.65	-358	0	102	17.35	18	17.05	
1219	15.2	6	6	15.12	15.12	-2	0	0	15.3	15.3	15.2	
1220	10.9	49	49	10.88	10.86	-4	0	0	10.95	10.95	10.8	
1225	50	40	40	49.53	49.58	-11	0	0	49.9	50	49	
1227	80.2	642	638	80.11	80.12	628	0	0	80	80.5	79.8	
1229	21	228	233	20.88	20.85	107	0	0	20.65	21	20.65	
1231	29.3	60	60	29.3	29.32	2	0	0	29.2	29.4	29.2	
1232	87.4	142	144	86.36	86.35	35	0	0	84.5	87.5	84.5	
1233	37.35	5	5	37.55	37.35	0	0	0	37.3	37.7	37.3	
1234	32.25	28	28	32.21	32.35	-16	0	0	32.15	32.35	32.15	
1235	28.25	34	34	28.15	28.15	-1	0	0	28.25	28.5	28.05	
1236	19.2	5	5	19.3	19.3	0	0	0	19.2	19.2	19.2	
1256	146	33	28	147.12	147.28	5	-5	-5	149.5	149.5	146	
1262	156.5	417	563	158.24	159.13	-22	0	148	159	162	156.5	
1301	78.9	2162	1900	78.59	78.61	638	181	7	78.3	78.9	77.9	
1303	62.6	3970	3396	62.41	62.39	1671	0	-5	62	62.6	61.5	
1304	14.2	487	479	14.18	14.18	335	0	-4	14.1	14.2	14.1	
1305	21.6	2618	1843	21.45	21.46	1847	340	-465	20.95	21.8	20.9	
1307	36.3	47	47	36.3	36.34	-20	0	0	36.3	36.5	36.2	
1308	17.9	190	190	17.87	17.87	36	0	0	17.75	17.9	17.7	
1309	7.78	233	241	7.76	7.76	5	0	4	7.88	7.88	7.73	

M	N	O	P	Q	R	S	I	U	V	W	X	Y	inc
ood ma	good kd	法人同步買超	主力買超				收盤	隔日漲幅	追打盤漲幅	score1	score2	最佳化參數	
TRUE	FALSE	1	0				67.65	-5.714%	0.004	6.580973965	4.999092	1.235727234	
TRUE	FALSE	0	0				23.79	-5.106%	0.003	2.720382609	0.999601	0.065015539	
FALSE	FALSE	0	1				17.71	8.451%	-0.004	0.57225796	1.000917	0.49547335	
FALSE	FALSE	0	1				35	-2.643%	-0.007	0.30403276	0.999443	0.327568375	
FALSE	FALSE	0	0				28.7	4.364%	-0.004	1.637089853	2.000726	0.076336526	
FALSE	FALSE	0	0				8.71	0.000%	0.000	-200	-200	-200	
TRUE	FALSE	0	0				21.9	-15.931%	0.036	2.347734313	3.994567	1.663954387	
FALSE	FALSE	0	0				10.25	0.000%	0.000	-200	-200	-200	
FALSE	FALSE	0	0				10.05	0.000%	0.000	-200	-200	-200	
FALSE	FALSE	0	0				15.25	0.000%	0.000	-200	-200	-200	
FALSE	FALSE	0	0				20.3	16.000%	-0.006	-0.57228719	-0.00086	0.328295982	
TRUE	FALSE	0	0				21.8	0.000%	0.000	-198	-200	-200	
TRUE	FALSE	0	1				29.5	8.257%	0.000	4.998896653	2.998897	0.92079011	
FALSE	TRUE	0	0				18.65	0.000%	0.000	-196	-200	-200	
FALSE	FALSE	0	1				37.15	0.000%	0.000	-200	-200	-200	
FALSE	FALSE	0	1				67.2	8.914%	0.019	2.051760594	3.996655	0.622577845	
FALSE	FALSE	0	0				8.16	0.000%	0.000	-200	-200	-200	
TRUE	FALSE	0	1				13.4	-23.647%	0.011	2.862949881	2.002551	0.076869046	
TRUE	FALSE	0	0				15.3	0.000%	0.000	-198	-200	-200	
FALSE	FALSE	0	0				10.75	0.000%	0.000	-200	-200	-200	
TRUE	FALSE	0	0				50.1	0.000%	0.000	-200	-200	-200	
TRUE	FALSE	0	1				80	-0.249%	0.002	4.750061714	2.999438	0.849693358	
FALSE	FALSE	0	0				21.3	0.000%	0.000	-200	-200	-200	
FALSE	FALSE	0	0				31.85	0.000%	0.000	-200	-200	-200	
TRUE	FALSE	0	0				78.2	0.000%	0.000	-200	-200	-200	
TRUE	FALSE	0	0				37	0.000%	0.000	-198	-200	-200	
FALSE	FALSE	0	0				32.85	0.000%	0.000	-200	-200	-200	
FALSE	FALSE	0	0				23.85	0.000%	0.000	-200	-200	-200	
TRUE	FALSE	0	0				19.95	0.000%	0.000	-198	-200	-200	
FALSE	FALSE	0	1				106	0.000%	0.000	-200	-200	-200	
TRUE	FALSE	0	0				156	-0.319%	-0.001	Sort by optimized parameters	0.006		
FALSE	FALSE	1	1				78	-1.141%	0.008	5.237571465	5.998028	1.363517122	
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FALSE	FALSE	0	0				39.1	0.000%	0.000	-200	-200	-200	
FALSE	FALSE	0	0				17.45	0.000%	0.000	-200	-200	-200	
TRUE	FALSE	0	0				7.23	0.000%	0.000	-198	-200	-200	

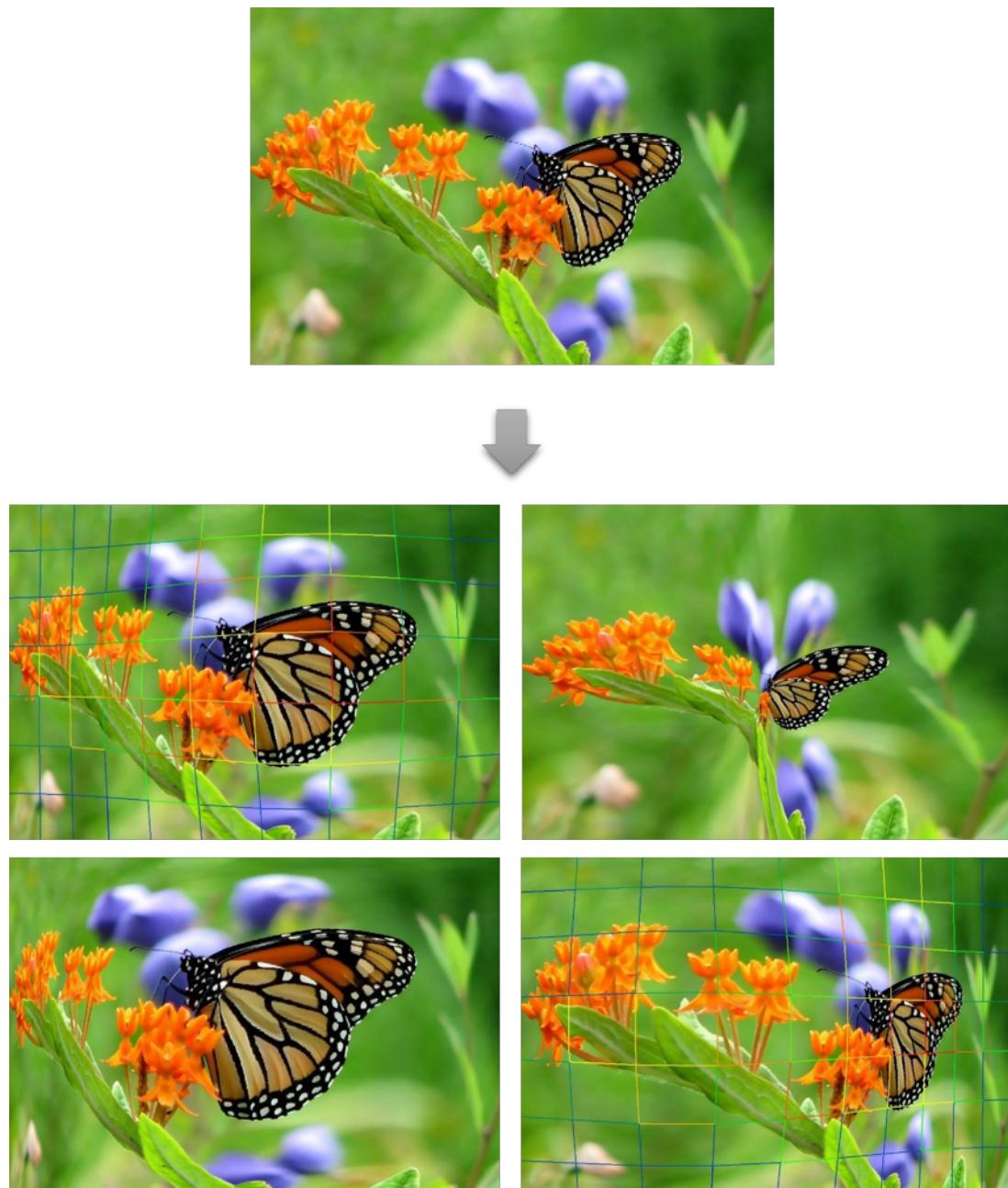
3 Image Focus Warping (2016)

Programming Languages C++

Keywords .Net / Open GL / Open CV / CPLEX Optimizer

Demo Video <https://youtu.be/h780wUY3hCM>

Description 在圖片上建立 mesh，並對 mesh 針對滑鼠或使用者想專注的位置進行 optimization，來達到 real-time focus 特定區域的效果。除了 focus 效果外，也可以產生簡單的 3D 效果，demo 影片會比較明顯。

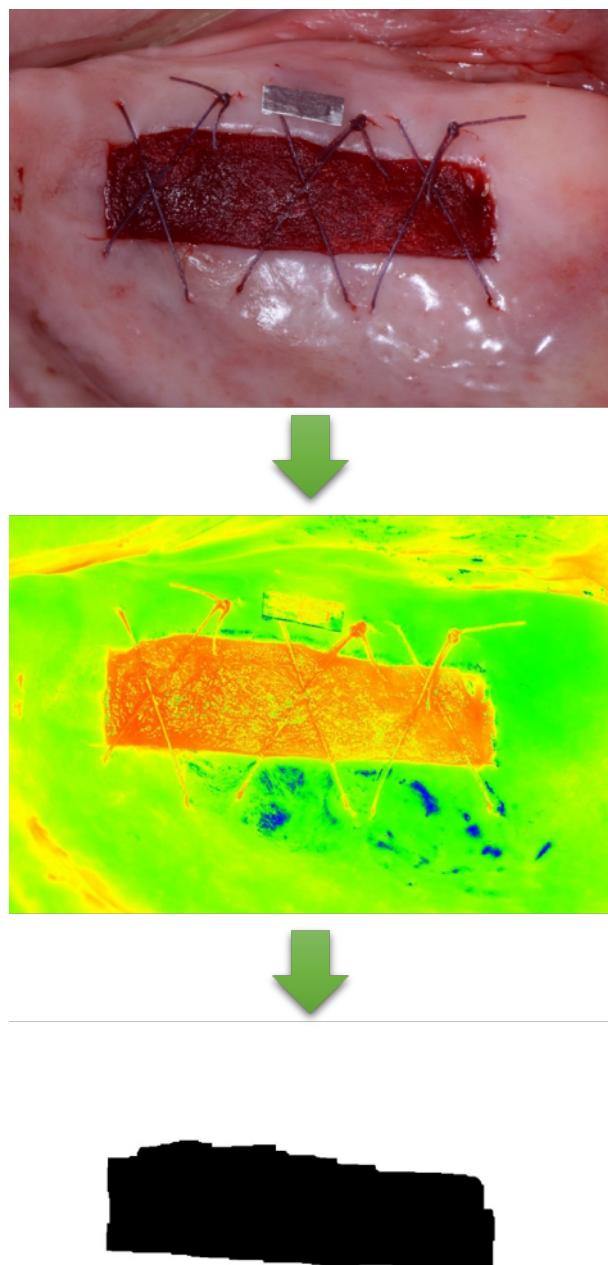


4 Wound Segmentation (2016)

Programming Languages C++

Keywords .Net / Image Processing

Description 自動偵測影像中傷口區域的程式。使用者輸一張傷口影像後，程式會進行 segmentation，並透過演算法產生一張 confidence map，將 confidence map 與 segmentation 結合後，找出分數較高的區塊作為傷口。



5 Treasure Defender (2015)

Programming Languages C#

Keywords Unity3D / Vuforia / Augmented Reality / Mobile Games

Demo Video <https://youtu.be/MR30Tnakevg>

Description 延伸先前的遊戲作品 NanoTD，加入 AR(擴增實境) 技術的塔防遊戲。玩家可以根據怪物進攻的位置，控制實體 marker 來調整防禦塔位置，達到有趣的遊戲體驗。



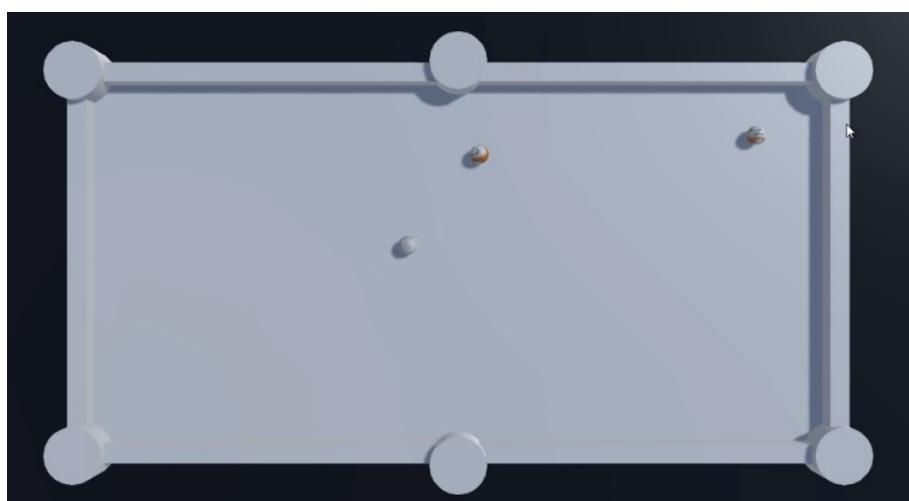
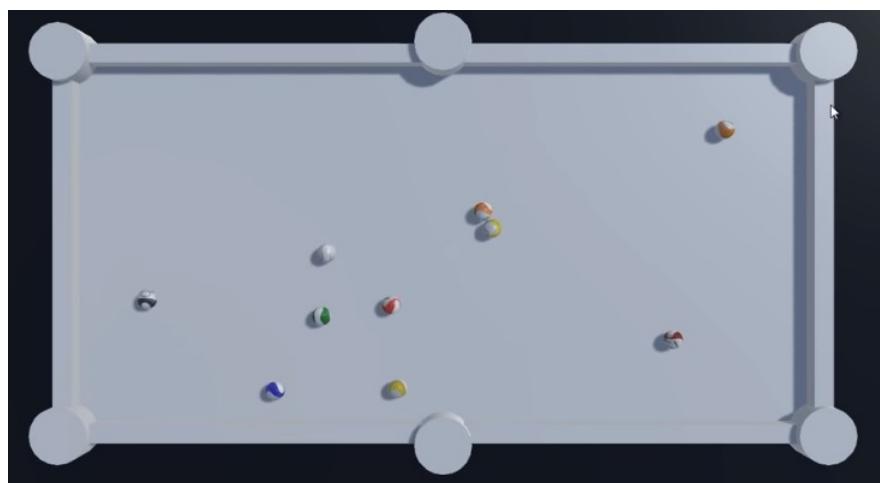
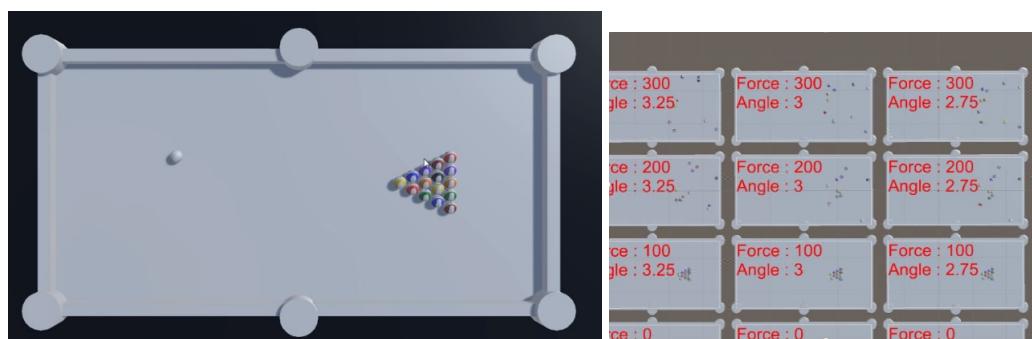
6 Billiards simulator / AI (2015)

Programming Languages C#

Keywords Unity3D / Physics

Demo Video <https://youtu.be/a3wxKH6SoUw>

Description 模擬撞球物理的系統，並設計一個 AI 自動找出最佳的擊球點與力道，自動完成一局撞球遊戲。



7 Nano TD (2014)

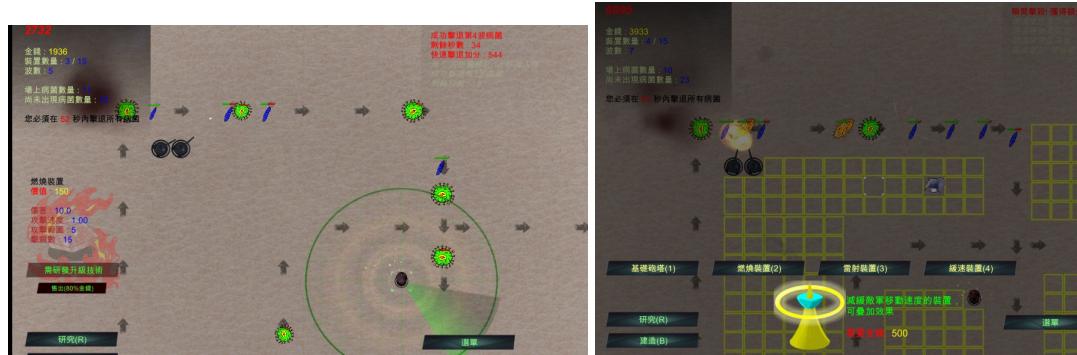
Programming Languages C#

Keywords Unity3D / PC Games

Demo Video <https://youtu.be/hmi9gCUOQOM>

Description Nano TD 是一個可以遊玩 30 分鐘以上的塔防遊戲，玩家在場上建造防禦塔來抵擋病菌。

遊戲內有科技系統、升級系統與組合系統等機制來增加變化性，並加入線上排行榜系統讓玩家競爭分數。詳細遊玩過程如 demo 影片所示。



8 NDHU Online Judge (2014)

Programming Languages C / PHP / MySQL / HTML / CSS / javascript

Keywords Linux / Online Judge / HUTSOJ (an open source online judge system)

Description 協助系上江政欽教授架設的程式解題自動評測系統，使用一個 open source 的 OJ 系統：

HUTSOJ，並加入一些修改，例如題目的 tag 與題目難易度評分等等機制。系統主要由一個 c++ 主程式，不斷監測 sql 資料庫中的內容，發現使用者新上傳的程式碼後，便會根據程式語言的資訊編譯並執行該程式，最後和資料庫中的答案比對並回傳評測結果。

RunID	User	Problem	Result	Memory	Time	Language	Code Length	Submit Time
5837	Dennis	1139	Accepted	964	0	C/Edit	1378 B	2014-01-02 23:25:09
5836	Dennis	1139	Wrong Answer	964	0	C/Edit	1379 B	2014-01-02 23:23:35
5835	achouman	1068	Wrong Answer	1504	0	C++/Edit	2632 B	2014-01-02 22:52:00
5834	achouman	1068	Time Limit Exceeded	77028	1000	C++/Edit	1993 B	2014-01-02 21:38:47
5833	achouman	1068	Compile Error(Click)	0	0	C++/Edit	2089 B	2014-01-02 21:36:14
5832	achouman	1493	Accepted	968	0	C/Edit	2996 B	2014-01-02 21:02:30
5831	achouman	1534	Accepted	964	0	C/Edit	1106 B	2014-01-02 20:38:06
5830	achouman	1534	Wrong Answer	964	0	C/Edit	1094 B	2014-01-02 20:36:06
5829	Dennis	1534	Accepted	964	0	C/Edit	1169 B	2014-01-02 17:59:41
5828	tobygameac	1493	Accepted	964	0	C/Edit	935 B	2014-01-02 08:58:36
5827	tobygameac	1492	Accepted	964	0	C/Edit	621 B	2014-01-02 08:47:31

Title	Tags	Dy	Davg	AC	Submit
1151 - 詭異的餘數		2	2.00	6	16
1153 - 連續自然數和		2	2.00	2	2
1155 - 喂反調	Easy	1	1.00	16	18
1156 - 24點				0	0
1157 - 郵局選址問題				2	8
1158 - 金明的預算方案	DP			2	4
1159 - 防禦導彈	DP	2	2.00	2	2
1161 - 馬欄過河卒	DP	2	2.00	2	5
1162 - A + B again	BigInteger	2	2.00	2	78
1163 - Problem A - Billiard				2	4
1164 - Problem B - The Brick Stops Here				0	2
1165 - Problem C - Election				1	1

No.	User	Nick Name	AC	Submit	Ratio
1	achouman	藍面魔神神功	149	223	66.816%
2	tobygameac	tobygameac	137	163	84.049%
3	apple45469	我的答案都是鈞之皓大神給的~	131	303	43.234%
4	Dennis	我的答案都是鈞之皓大神給的~	128	285	44.912%
5	teachme	我的答案都是鈞之皓大神給的~	126	359	35.097%
6	410121049	我的答案都是鈞之皓大神給的~	84	232	36.207%
7	a0919376604	我的答案都是鈞之皓大神給的~	82	142	57.746%
8	410121031	鈞之皓	78	115	67.826%
9	yajinyyee0306	yajinyyee0306	78	320	24.375%
10	rubynose	lai lie	52	122	42.623%
11	poloko123456	小羊的表媽像表妹	48	58	82.759%
12	kuroineico	小貓喔OVO	48	108	44.444%
13	poloko123	小羊的表媽像表妹	48	130	36.923%
14	p890040	~	45	60	75.000%
15	410121026	大企額不要一直看排行榜了	39	66	59.091%
16	410221002	Yo~~~!!	38	107	35.514%
17	max830512	東華枷蘿王 喜懲兒都給我下去	36	49	73.469%
18	007	力拔山河氣蓋世	34	67	50.746%
19	1100110000	~~~	~~~	~~~	~~~

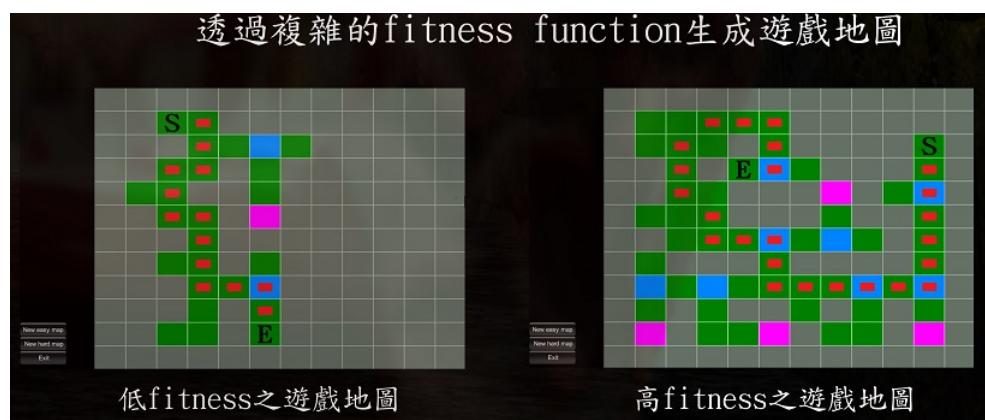
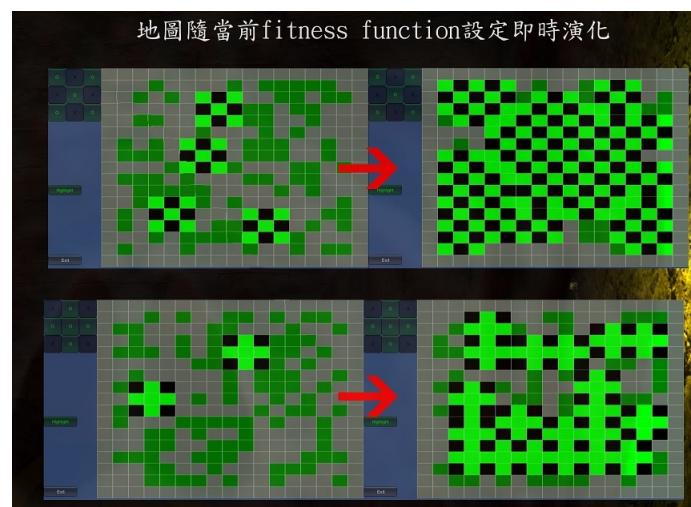
9 Automatic generation of game maps with specific difficulty (2014)

Programming Languages C#

Keywords Unity3D / Genetic Algorithm / Procedural Content Generation

Demo Video <https://youtu.be/wQ1D3aI0zHo>

Description 為了增加遊戲的變化性，隨機地圖是很常見的一種應用。產生隨機地圖的同時，如何維持地圖的難度是一個很重要的問題。若地圖透過完全隨機的方法來生成，難易度的變化會非常大，造成玩家有較差的體驗。此專案透過基因演算法來隨機產生地圖，並考慮交叉、轉角與最短路徑等資訊，透過複雜的 fitness function 來計算地圖的難易度。除了迷宮生成演算法外，另外開發了一個恐怖迷宮遊戲，並透過使用者實際遊玩來驗證演算法的效用。

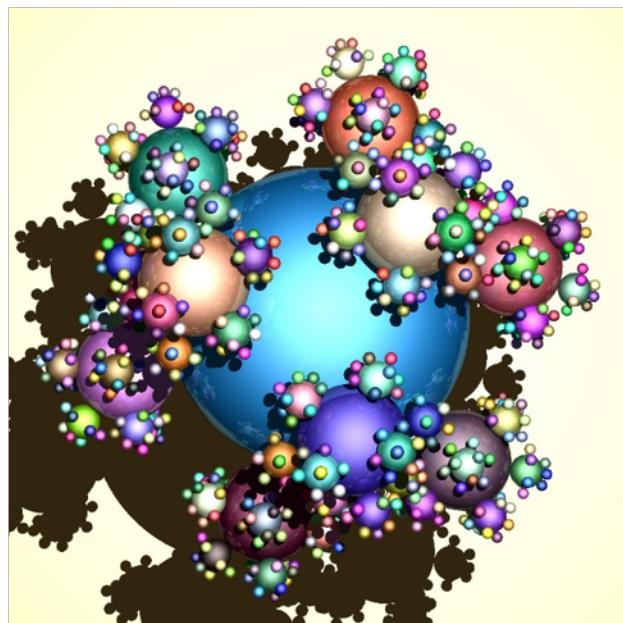
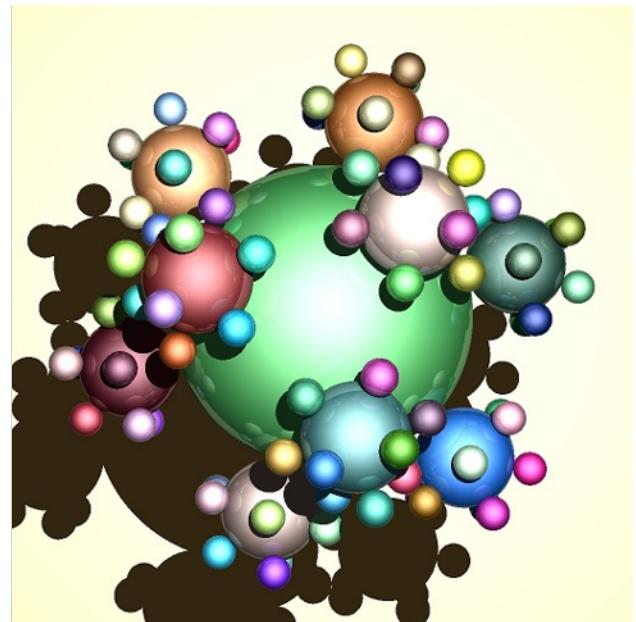
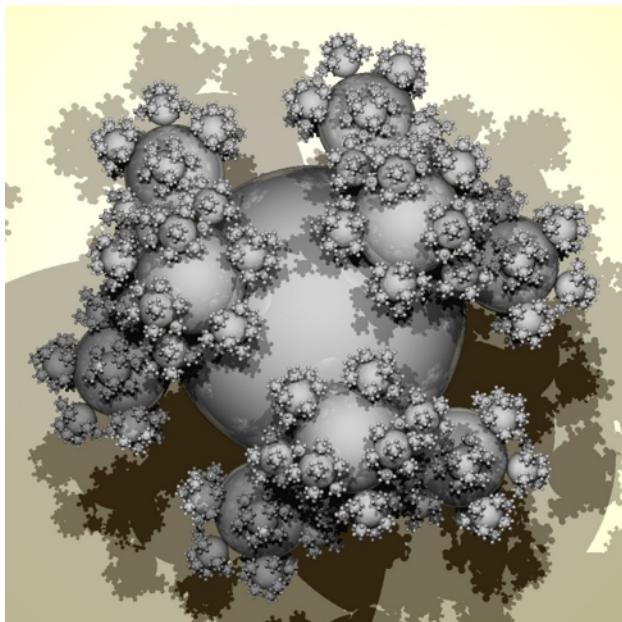


10 Ray Tracer (2013)

Programming Languages C++ / C#

Keywords Rendering

Description Ray tracing(光線追蹤) 是電腦圖學中一種 Rendering 的技術，透過追蹤視角發出的每一條光線來計算畫面中每個像素的數值，繪製出較為逼真的結果。



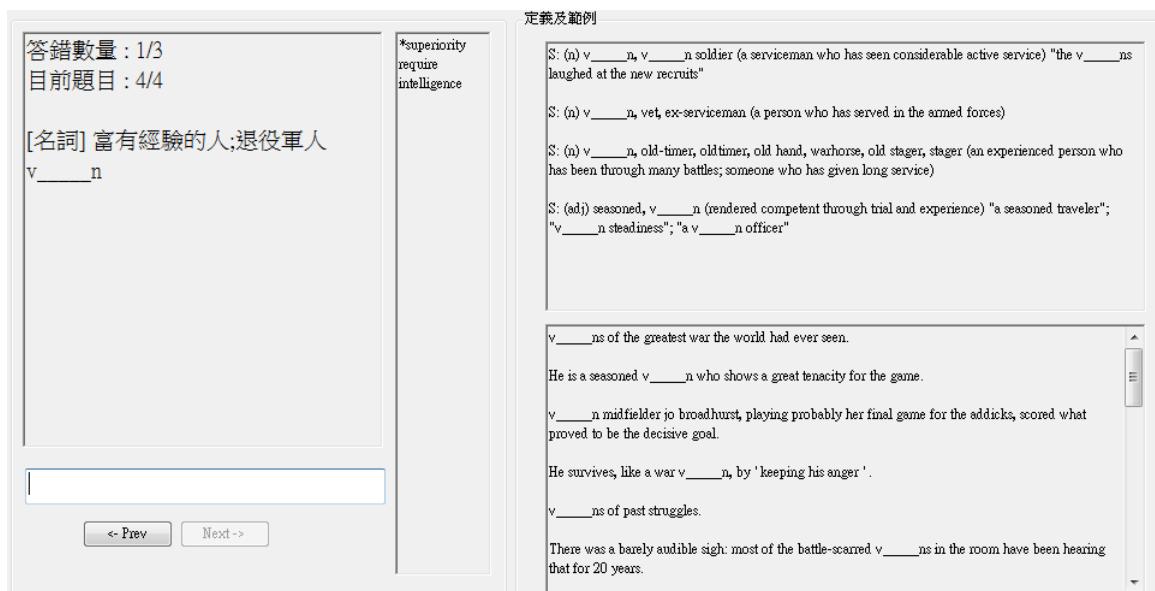
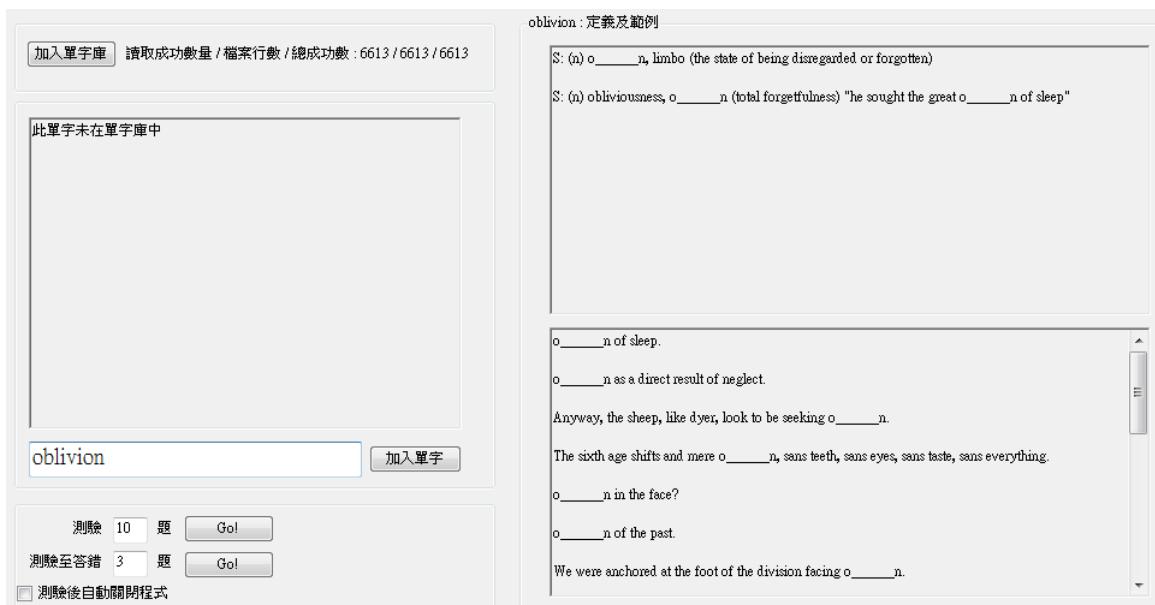
11 English Vocabulary Learner (2013)

Programming Languages C#

Keywords .Net / Speech Recognition / Web Crawler

Demo Video <https://youtu.be/ZOqRDSktrV0>

Description 一個輔助單字學習的應用程式，系統會從單字庫中挑選單字出來，並從網頁上自動抓取例句等資訊，使用者需要根據這些資訊回答出完整的單字。系統會根據使用者回答情況的正確與否，調整每個單字的權重，權重較高的單字，在測驗時會有較高的機率被選中。此外，程式有加入語音辨識的功能，使用者可以透過語音來回答答案與控制程式，詳細結果如 Demo 影片所示。



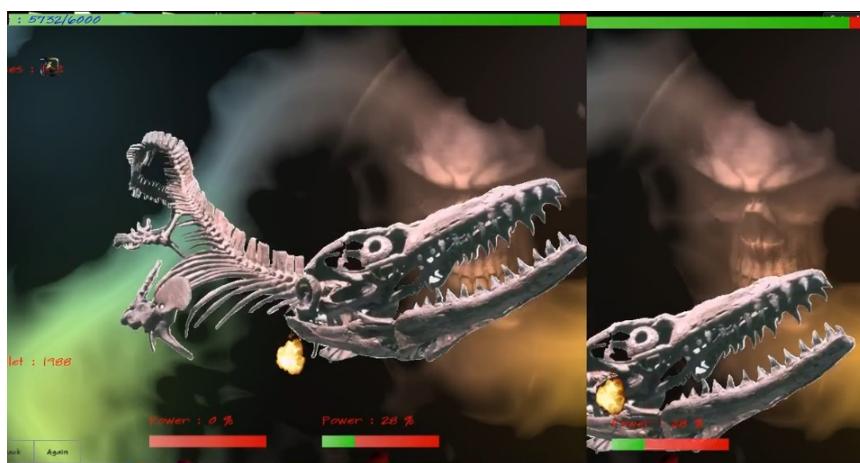
12 Ghost Defense (2012)

Programming Languages Java

Keywords Socket Programming / PC Games

Demo Video <https://youtu.be/1BxR7WdZPyY>

Description Ghost Defense 是一個雙人連線的 PVE 射擊遊戲，玩家需在第一關將場上的小怪物清理完畢，才能進入第二關與魔王戰鬥。怪物會在場上不斷移動，玩家需要在子彈有限的情況下完成挑戰。



13 Personal Website (2012)

Programming Languages HTML / CSS / javascript

Link <http://www.tobygameac.com>

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Profile

- Name : 張傑程
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- Birth : 07/22/1993
- Language : Mandarin Chinese, English
- Interesting : Puzzles, [Movies](#), [Games](#)

About Programming

Major

- Enthusiasm for programming
- Problem solving
- Ability to learn new techniques and languages

Minor

- Languages : C, C++, C#, Java, Python
- Research Areas : Computer Graphics, Image Processing
- Etc : Qt, .NET
- Etc : OpenGL, OpenCV
- Etc : Unity Engine, Game Programming, Design
- Creation

Experience

- 2015 Honorary member of the The Phi Tau Omega Honor Society
- 2014 - 2015 TA of Introduction to Computer Programming
- 2012 - 2013 TA of Introduction to Computer Programming
- 2013 500+ problems solved on UVa(ACM) Online Judge