

# XR 跨域專題 創造無限幻境

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XR 熱潮正方興未艾，亦是未來的重點科技。由資工系莊榮宏教授、傳科系張宏宇教授、應藝所謝啟民教授及墨匠科技王銓彰執行長四位老師共同開設「XR 跨域專題」。XR 跨域專題是交通大學創創工坊 VRA 小組的核心實作課程，透過不同領域學生組成團隊，擔任程式設計師、2D/3D 視覺設計師及聲音設計師 (sound designer)，藉由動手操作過程中學習跨領域合作，此學期共執行三個專題。

為展現專題成果，於 109 年 7 月 1 日辦理期末 XR Showcase，共有八組參賽作品，是由二十多個專題成果中由同學票選出。Showcase 前半段時間開放給師生體驗，後半段時間邀請學界與業界專家評審及開放同學票選。本次專題作品成熟度令人驚豔，顯見學生們成長頗多。以下是作品介紹：

## 最佳 XR 獎：Boundary

成員：林克帆、林詠詩、張晉城、鄭適其

這是一款間諜遊戲。三名玩家分別扮演遭到陷害的社會運動領導人、領導人助手，以及陷害領導人的間諜。助手和間諜分別使用 AR 在外圍幫助 / 阻礙領導人。領導人使用 VR 在監獄迷宮內找資源逃生。領導人在迷宮內會收到兩人的指示。但有一方是敵人，因此要判斷哪一方是助手，哪一方是間諜。最後要在時間內逃出去。遊戲特點是結合 VR 和 AR，三方的行為會相互影響。助手和間諜都會被變聲，要讓領導人自己判斷。XR

技術反而強化遊戲中的緊張懸疑的部分。

## 最佳創意獎：七彩霓虹棋

成員：王丰怡、李家揚、楊秉澄、戴志達、賴奕善

本專題嘗試將五子棋透過 VR 連線以雙人對戰的模式呈現，但考量到五子連線容易有先手優勢因此改為四子連線，而評斷機制是將所有棋子都將投影到六個面，若有連線便獲勝，因此，增設一個小棋盤讓玩家都能縱觀整場棋局！

遊戲最有趣的地方在於，棋盤是 3D 的並且棋子的六面會有不同顏色，因此，每下一個棋都有可能對其他面棋局產生影響，所以非常考驗玩家的空間邏輯能力！另外，遊戲中還加入了互動選單，讓玩家在過程中能和對手交流互嗆，增加遊戲中的互動趣味性！

## 勇於挑戰獎：山有木兮

成員：黃筱涓、潘怡汝、李東穎、曾維浩、廖志唯

山有木兮是一款 VR 角色扮演戀愛遊戲，主角 ( 玩家 ) 原本是一棵樹，愛慕著一位每日經過他樹下的女子。終於，他強烈的執念打動上天，開啟了不斷轉生到其他身體 ( 比如：貓咪、鸚鵡等等 ) 中並追求心上人的旅程。只要玩家完成特定的任務，就能進入下一個身體，而在不同身體當中必須扮演好進入的角色，並以角色能做出的行為和女主進行互動，增進好感度。如果最後好感度達到標準、且成功轉生為人，就能和心上人終成眷屬。

除了能在遊戲當中體驗成為人類以外的生物

非常有新鮮感之外，在劇情上我們也花了許多心思來呈現。每個角色都有各自的故事，隨著任務的完成，會逐漸了解角色的背景和女主的個性，讓玩家能更有帶入感。

製作這款遊戲花了非常多的時間，甚至到展示的前半夜組員們都還在系館通宵趕工，過程中付出了心血也是難以估量的，但最後的成品大家都非常喜歡，也成為了難忘的回憶。感謝指導老師，莊榮宏、謝啟民、張宏宇、王銓彰。

## 最佳呈現獎：監獄逃脫

成員：黃筱涓、潘怡汝、李東穎、曾維浩

這是一款雙人的協力賽車遊戲，PC 玩家駕駛賽車，VR 玩家蒐集、操作道具，以逃出監獄孤島為目標共同合作。遊戲的最大特點在於兩位玩家的操作互相影響並且缺一不可，因此遊戲中需要大量的溝通與討論來應付各種突發狀況與對付敵人。遊戲中本來是兩位好友要一起逃獄，但是其中一位卻在中途中槍身亡。PC 玩家就是倖存下來的駕駛者，而他死去的友人則是化作了靈體幫助好友向自由邁進。

此外，由於 PC 玩家是車子駕駛者的一般視角，而 VR 玩家卻是一種近似於巨人的上帝視角，雙方的遊戲體驗是完全不同的，非常推薦兩個角色都要體驗看看。感謝指導老師，莊榮宏、謝啟民、張宏宇、王銓彰。

## 最佳人氣獎：NCTU-RUN

成員：劉安齊、林冠宇、王淞正、陳雅致、黃韜云

在這個熱愛運動的校園中，我們調查了許多在校有運動習慣的學生與教職員，發現了不少人對於單純的跑步感到平凡無聊，所以我們結合了音樂節奏遊戲與最新的穿戴式裝備 Hololens，藉由交替跑道、撞擊拍點、躲避虛擬障礙物等等，讓枯燥乏味的跑步運動增添趣味，也藉由遊戲前的暖身，提醒著使用者千萬不能忽略需要適當的拉筋，造以免造成後續的運動傷害，以及遊玩後會給予各項數據監控，讓使用者更加清楚自己的跑步情形與改善方向，讓你更清楚自己身體機能。

在未來希望能夠裝置在更輕便的裝置下，並結合手機與智慧型手錶等等，更方便記錄位置、里程數、心跳，手機甚至可以記錄歷史跑步紀錄，甚至可以將喜歡的歌曲直接由手機上傳至遊戲當中，使得此裝置可以吸引更多人，增加遊玩的彈

性化。

## Showcase 展入圍：

### Fire

成員：林克帆、林詠詩、張晉城、魏旭濤、羅右喬

Fire 是一款結合防火宣導、災難逃生的遊戲。遊戲的構想來自當時的火災議題。我們想做出一款寓教於樂的遊戲，讓玩家體驗遊戲後能更了解防災觀念和火場逃生的必要知識。遊戲分為兩部分，第一部分是發生在火災前，檢修人員要檢查防火設施、清空逃生口等。另一部分是逃生人員，要在時間內運用逃生知識離開火場。檢修人員的行為可以影響逃生人員的遊戲難度。如果未來繼續改進遊戲，開發人員會加強畫面與特效功能，期待能造出更擬真的場景。

### 樂音夢王國

成員：戴靜雯、黃元欣、鄭適其、陳以諾、林坊羽

這是一款音樂療愈型遊戲。樂音夢王國的公主陷入了沉睡，需要世界上最美妙的樂曲才能喚醒她。玩家扮演被皇室召集的音樂家，需要在王國內的音樂魔法迷宮創造樂曲。遊戲場景共有三種地形：上下階梯、平路以及斜坡，藉由地形創造音樂的多樣性。場景以春夏、冬天為主體，並加入霧氣以及不同的障礙物增加遊戲變化度及難度。玩家在地形起伏的迷宮上移動，而音樂就如同鋼琴按鍵般的彈出，途中會遇上魔法棒、障礙物以及霧氣的阻礙和驚奇讓音樂產生更多樣的變化。

### NEMO

成員：戴靜雯、黃元欣、李啟安

這是一款解謎遊戲，故事改編自 Scribbly G 的漫畫：Nemo 死了，焦急的父母決定在 Timmy 發現前換一隻新的。然而，計畫並未成功，且 Nemo 逐漸發現身邊的異狀。玩家須扮演新的 Nemo，與 Timmy 一同發掘身分真相。玩家可和周遭所見物品互動，若是感到疑惑，則可依靠 Timmy 給予提示。未來希望 2D 與 3D 美術風格可更協調，並再添加提示、伏筆和與關鍵角色互動性。並加強關卡銜接順暢度與劇情完整度，讓玩家得知結局時更加驚訝。

## 更多資訊連結：

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# XR Interdisciplinary Project Can Make Your Imagination Come True

XR is very popular in recent years, it is also the key technology for future technology. Prof. Jung-Hong Chuang at the Computer Science Department, Prof. Hong-Yu Chang at the Department of Communication and Technology, Prof. Chi-Min Hsieh at the Institute of Applied Arts, and Chuan-Chang Wang, the executive director of Blacksmith Technology Ltd. collaborated and taught in the course, XR interdisciplinary project. The course was one of the core hands-on courses in the NCTU-ICT, in which students from different fields became the programmer, 2D/3D visual designer, and sound designer to conduct 3 projects together. To present the outcome of the course, XR Showcase was held on the 1st of July, 2020. 8 groups were selected and presented with an award from 20 and more groups. In the first half of the showcase, professors and students were invited to experience the games. At the second half of the showcase, it was the voting time for students and judges in different fields. Overall, all the works were very impressive, which showed students' learning journey through this course.

## The best XR: Boundary

**Members: Ke-Fan Lin, Yung-Shih Lin, Chin-Cheng Chang, Shih-Chi Cheng**

This is a spy game. The feature of this game is to combine VR and AR together. Three players in this game should be the leader of social movement, the assistant of the leader, and the spy who wants to frame the leader. The interaction among three players has an impact on the results of this game. The leader should use VR to find some resources for escaping a maze. This role could get the direction from the other two roles: the assistant and the spy. The assistant

and the spy should separately use AR to assist or hinder the leader. The voice of these two roles will be changed, and the leader should judge which one is the enemy and escape the maze in time. In addition, the application of XR could strengthen the suspenseful atmosphere in this game.

**The creative award: Rainbow Gomoku Members: Feng-I Wang, Chia-Yang Li, Ping-Cheng Yang, Chih-Ta Tai, I-Shan, Lai**

This project tries to apply the technique of VR for making a dual-mode in Gomoku. Considering that the offensive move in Gomoku has its advantage, this project changes the rule to four chess pieces. The most interesting thing about this game is that the checkerboard is 3D. In addition, every chess consists of six dimensions, and each dimension has its own color. This design examines players' spatial logic. Moreover, to increase the fun among players, the interactive menu in this game could let players talk smack to each other. The mechanism of judgment is to project all chess pieces in six dimensions. If someone makes the connection of four chess pieces, he/she will be the winner. This game also provides a small checkerboard for players to make the big picture of each chess game.

## The challenge award: Shan You Mu Xi

**Members: Hsiao-Chuan Huang, I-Ju Pan, Tung-Ting Li, Wei-Hao Tseng, Chih-Wei Liao**

Shan You Mu Xi is a relationship simulation role-playing game. The player in this game could have the feeling of virtually through the technique of VR. At the beginning of this game, the player acts a role

of a tree that wants to pursue a girl passing by him every day. In the midst of this game, the player should complete certain missions so that this character could reincarnate into other creatures (i.e., cat, parrot, and human.) for interacting with this girl. The player could beat the game if the character achieves a certain level of affection with this girl. We took lots of time to design this game. For the plot part, we dwell on the details of describing characters. Along with the completion of each mission, the player could be gradually immersive in the story of each character. For the game experience design, we dwell on the feeling of virtually. The player could experience being other creatures through VR. We try the whole bag of tricks to this game, and our efforts during this process become an unforgettable memory in our life.

## The best presentation award: The Escapists

**Members: Hsiao-Chuan Huang, I-Ju Pan, Tung-Ying Li, Wei-Hao Tseng**

The Escapists is a racing game. For the plot part, two characters trying to escape from jail on an island. One is a human being who drives a racing car for escaping. The other one is a ghost who can help the human being overcome emergencies and beat enemies. For the game design part, this game needs two players working together. Acting as a role of the human being, one player should use the first-person point of view to drive a racing car on a computer. Acting like the role of the ghost, the other player should use the third-person point of view to collect and operate props through VR. Also, these two players need to discuss together anytime to face a variety of situations and come up with different strategies. Thus, each player in this game can have totally different game experiences.

## The most popular award: NCTU-RUN

**Members: An-Chi Liu, Kuan-Yu Lin, Sung-Cheng Wang, Ya-Chih Chen, Tao-Yun Huang**

NCTU-RUN is a sports game combining music rhythms and the latest wearable device, Holoens. To increase the fun during jogging, this game provides a variety of information and entertainment for players. Before jogging, players will be reminded to warm up to avoid sports injuries. During jogging, players will have a lot of fun through different missions, such as alternate tracks, hit beats, and escaping virtual obstacles. After jogging, players will get body data and some advice of his/her jogging positions. In the future, as game designers, we hope this game can be designed in a lighter device, and combine smartphone and smartwatch for providing more functions, such as recording body data more conveniently and uploading favorite songs.

## Showcase nominations:

### Fire:

**Members: Ko-Fan Lin, Yung-Shih, Lin, Chin-Cheng Chang, Hsu-Tao Wei, Yu-Chiao Lo**

Fire is a game to combine promoting fire prevention and escaping from a fire. It was inspired by the issue of fire disasters. We aimed to design a game that has entertainment and education meanings to promote knowledge related to fire. There are two parts in the game: the first part happens before the fire, the maintenance person has to check fire equipment and clear the emergency exit door. The second part of the game involves characters in the game who need to apply the knowledge about the fire to escape within the time limit. For future improvement, the game developer will focus on the special image effect in the game to create more real scenes.

## Music Kingdom

**Members: Ching-Wen Tai, Yuan-Hsin Huang, Shih-Chi Cheng, I-No Chen, Fang-Yu Lin**

This is a music game. The story in the game is about a princess in the music kingdom who fell asleep, and only the most beautiful music in the world can wake her up. Players will be the musicians who are convened by the royal family, and they need to compose music in the kingdom. There are three topographies in the game, stairs, flat road, and slope, which contribute to the variation of the music. There are spring, summer, and winter in different settings. The fog, magic stick, and different obstacles increase the difficulties of the game. While players shift between different mazes, music will be playing at the same time.

## NEMO

**Members: Ching-Wen Tai, Yuan-Hsin Huang, Chi-An Li**

This is a puzzle game, which is adapted from a comic book, Scribbly G. In the story Nemo has passed away, his parents decided to change to a new fish before Timmy finds out. However, the plan was not successful and Nemo started to notice the unusual situation around it. The players will be Nemo to discover its true identity with Timmy. Players can interact with objects in the game. During the journey, Timmy can provide hints. In the future, we hope to improve the quality of the art style in the game. Also, we want to add more hints and increase the interaction between the main characters. Furthermore, we would like to emphasize the smoothness of different stages and increase the completion of plots to surprise the players in the end.

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