2013二十一屆太平洋電腦圖學會議
(Pacific Graphics 2013)

一、 目的

Pacific Graphics (PG) 2013泛太平洋地區最重要的電腦圖學國際會議,也是全球三大電腦圖學國際會議之一。參加本次會議主要目的是 (1) 報告一篇 IEEE TVCG 推薦之論文 (**Double-sided 2.5D Graphics,** Chih-Kuo Yeh, Peng Song, Peng-Yen Lin, *Chi-Wing Fu*, Chao-Hung Lin and Tong-Yee Lee*, *IEEE Transactions on Visualization and Computer Graphics* (***IEEE TVCG***), 2013, Vol.19, no. 2, pp. 225-235, Feb. 2013) at regular technical paper oral presentation section (2)訪問 Nanyang 理工大學Prof. Philip Fu，Prof. Fu 也是本篇文章**Double-sided 2.5D Graphics** 共同作者,也順便討論目前合作研究,Animating Hair in Cartoon Images by 2.5D Modeling 進度討論。由於不少學者參與此盛會，趁此機會與他們進行學術交流。

二、 過程

本次會議從 2013/10/07至 2013/10/09，本次大會，會場是座落在 Singapore (新加坡)國際會議廳。本人(計畫主持人)與博士班學生葉智國從 2013/10/06 桃園機場搭華信飛機，直飛新加坡與會，本人並於2013/10/09深夜12:00pm回國。此次會議,有來自全世界,約150 人來參加,學者有來自美國,歐洲,亞洲大陸,日本， 韓國，香港與台灣。來自臺灣學者除筆者外，還有師大張鈞法教授。大陸學者不少與會。

三、 具體完成之工作

本次會議從10/07 至10/09，議程十分緊湊，包括full paper program，short paper program，TVCG paper program與2場精彩invited talks : 1) Prof. Shahram Izadi at MSR (Cambridge) ， 2) Prof. Nigel Sumner at ILM。

Prof. Shahram Izadi 介紹主題為: **The Seventh Wonder of the Computer Interface**，介紹人機介面設計，而Prof. Nigel Sumner介紹主題為: **The VFX of the Pacific Rim with Nigel Sumner, VFX Supervisor**，介紹電影特效該**VFX**如何產生。

大會program包括: 1) image procession (1~6) sections, 2) rendering (1~2) sections, 3) animation (1~2) sections, 4) TVCG (1~2) sections, 5) geometry processing (1~2) sections與6) short paper presentation (1-2) sections。

有關本次在PG 2013，報告一篇 IEEE TVCG 推薦之論文 (**Double-sided 2.5D Graphics)** ，其英文摘要如下:

Double-sided 2.5D Graphics, Chih-Kuo Yeh, Peng Song, Peng-Yen Lin, *Chi-Wing Fu*, Chao-Hung Lin and Tong-Yee Lee*, *IEEE Transactions on Visualization and Computer Graphics* (***IEEE TVCG***), 2013, Vol.19, no. 2, pp. 225-235, Feb. 2013

Abstract

This paper introduces double-sided 2.5D graphics, aiming at enriching the visual appearance when manipulating conventional 2D graphical objects in 2.5D worlds. By attaching a back texture image on a single-sided 2D graphical object, we can enrich the surface and texture detail on 2D graphical objects and improve our visual experience when manipulating and animating them. A family of novel operations on 2.5D graphics, including rolling, twisting, and folding, are proposed in this work, allowing users to efficiently create compelling 2.5D visual effects. Very little effort is needed from the user's side. In our experiment, various creative designs on double-sided graphics were worked out by the recruited participants including a professional artist, which show and demonstrate the feasibility and applicability of our proposed method.

Index Terms—2.5D modeling, vector art, layering

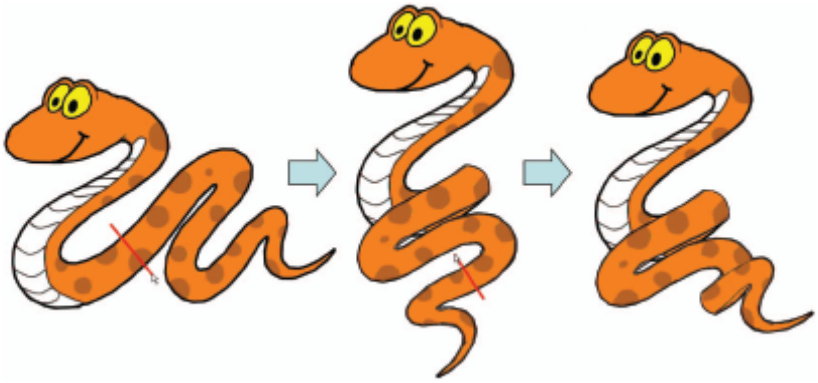

Figure 1: Folding a double-sided graphics multiple times. Left: the input object and the first folding line (in red); middle: the result after the first folding and the second folding line; right: the final result after the second folding.

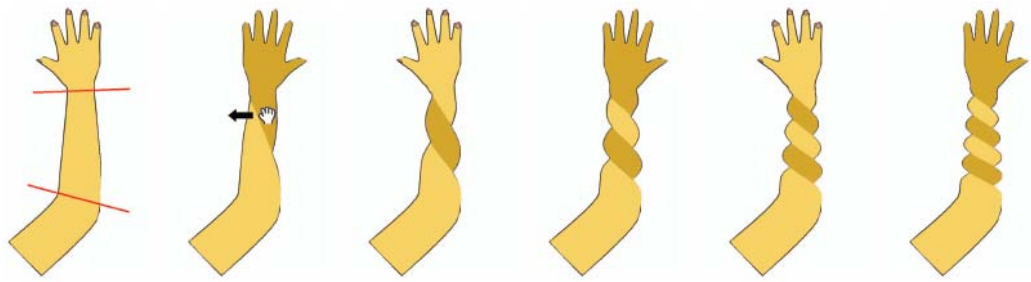

Figure 2: Twisting example. Left-to-right: sketch two boundary lines on the graphics, and then drag the mouse (to the left) to interactively adjust the amount of twisting.

此外與Prof. Philip Fu討論目前合作研究，此研究為: Animating Hair in Cartoon Images by 2.5D Modeling，其研究英文摘要如下:

Animating Hair in Cartoon Images by 2.5D Modeling

This report proposes an interactive tool that takes a single cartoon image as input and animates the hair of the character in the image through simple user markup. By this, we can efficiently produce animated scenes of cartoon characters with hair in motion. Such scenes are very common in hand-drawn animations. We address this problem by 2.5D modeling. Given an input cartoon image, we first segment the hairs of the cartoon character into groups of hair threads, and iteratively complete the hair threads and form a 2.5D layered hair model. Then, through a simple user markup, which specifies the fore part of the head, our tool determines the shape of each hair thread by computing its medial axis from the fore head to its tip. By further analyzing the 2D

shape of the hair threads, our tool can estimate pseudo depth for each hair thread, which is constrained as a smooth curve in 3D, and then applies it to animate the hair model. In this way, we can efficiently produce cartoon character animations, which can retain the artist's expressive style originally in the 2D manga drawing. Additional applications include transferring the hairstyle of one character to another, as well as modifying the hair style.

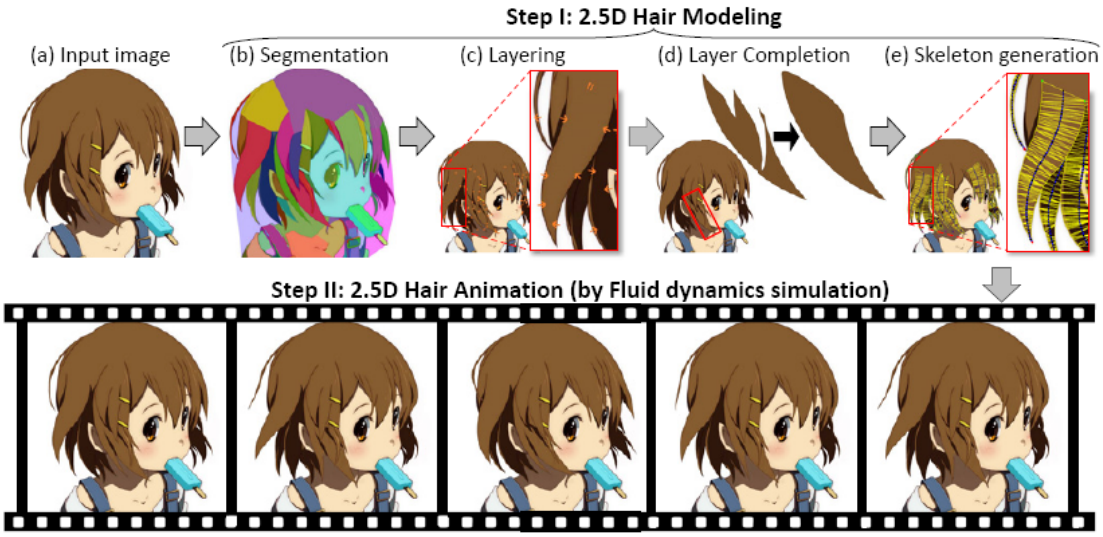

Figure 3: *Overview of our 2.5D approach. Note that in subfigure (c) above, the orange arrows show the depth ordering, i.e.,pointing from occludees (lower layer) to occluders (upper layer), whereas the = signs denote same depth ordering.*

附錄:

最後，筆者參加此次會議，帶回了論文集 CD一片，感謝補助筆者參加 PG2013