

Practical Computer-Generated Animation of the Hermit's Body Twist “Rusie Dotton”

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The hermit's body twist “Rusie Dotton” are physical exercise postures which are evidently restored in the Region of King Rama I (1782-1809). He was the first King of Chakri Dynasty who established Bangkok as the capital of Thailand. The restoration was aimed to integrate all knowledge of Thai medicine which Rusie dotton is obviously included. The king would like his people to use the Rusie Dotton for relaxation and therapy [1]. The king had ordered to build and keep all Rusie Dotton sculptures at Wat Phrachetuphon Vimolmangklaram Rajwaramahaviharn (Wat Pho or The temple of the reclining buddha) so that his people can access, follow, and relax with Hermit's body twist easily. The temple is located adjacent to the Grand Palace in Bangkok.

Later on, during the Region of King Rama III (1787-1851). He graciously ordered Krommuen Naronghariruks to lead in sculpting all 80 Rusie Dotton postures into new sculptures. These new sculptures were formed by zinc and tin (Chin) making them more durable. Finished sculptures are distributed to the monasteries surrounding the temple. Each of the sculptures has accompanied by an engraved stone. Each of the stones has been distinctly engraved by poems composed by the King Rama, and his royal families, royal court officials, poets, monks, and common people.

In the present, only 24 postures in 25 sculptures are found in the temple. The sculptures are now collected at Kao Rusie Dotton (a mountain of the hermit's body twist) and the engraved stones are still located at monasteries [2].

Benefit of Rusie Dotton

Apart from helping you to stay fit and firm, these exercises will help you feel relax as well. Moreover, the routines can also heal some of simple illnesses. The routines will also help us to easily move body joints, improve the body circulation, reduce stress, drowsiness and discouragement. You can also be more focus.

Group of people usually do these exercises together. Rusie dotton's animation online will be another channel for the community to do this kind of exercises together via web-based application. In addition, the members can share their experiences/knowledge/information related to Rusie dotton through this system. Therefore, this is an example of social computing since computer science technologies such as web 2.0, social choice, and collaborative filtering are applied to support this social behavior through the computational system [5].

Fifteen basic and safe Rusie Dotton postures [1, 3] that are now digitized and animated:

1. For face muscle, includes 7 postures.
 - 1.1. To push hair.
 - 1.2. To spread powder.
 - 1.3. To wipe mouth.
 - 1.4. To wipe shin.
 - 1.5. To press under the shin.

- 1.6. To rub front ear and back ear.
- 1.7. To slap occiput.
2. For discomfort of the wrist scrotum problems.
3. For abdominal pain, ankle pain and headache.
4. For headache, blur vision and general weakness.
5. For discomfort of the arms.
6. For low abdominal pain, scrotal distension, and knee problems.
7. For chronic muscular discomfort and suppression of sexual desire.
8. For arm movement.
9. For longevity of life.
10. For legs, shoulders, and knee trouble.
11. For chest trouble.
12. For cramps on the hands and legs.
13. For lower back pain, hip, and shoulder discomfort.
14. For blur vision problem and general muscle cramps.
15. For numbness of the hand and foot.

Epigraphic archives of Wat Pho is one of the first four inscriptions which was launched the Asia Pacific regional register certificate in February 2008 [4]. The recognition of the inscription has brought a lot of attraction from press, radio, and television in Thailand. The ceremony to celebrate the transmission of the inscription certificate to the Lord Abbot of the Wat Pho Monastery was taken place in the March 2008. Since Wat Pho is a major tourist destination in Bangkok so the archives which are on stone tablets can always be inspected by visitors.

The Thai National Committee on Memory of the World Programme of UNESCO had given a request for NECTEC to develop the Rusie dotton's animation in order to publicize this special body's twist exercise. The digitized Rusie dotton allows everyone who can access to the Internet to be able to follow the exercise easily and correctly. Besides, they do not have to travel to a fitness center or a specific place for doing Rusie dotton workout. They can do the workout at home, office or even in their bedrooms.

Work flow and related technologies

The digitized Rusie Dotton allows any person who has an access to the Internet to follow the exercise easily and correctly. 3D modeling and animated technology are applied in order to develop the Rusie Dotton's animation. The developing process has been divided into three steps:

Step 1. Create 3D Model

Design and create Rusie 3D model in 3D software from Traditional Thai paintings sculptures of Wat Pho.

Step 2. Create animation

2.1. Animate by video emulation.

Rusie Dotton video postures by human are pasted into the background while 3D model of Rusie (Hermit) which rigging skeleton is already displayed on screen up front. The skeleton is moved in 3D model emulating the video background every 25 frames because PAL video technology requires 25 frames in one second, only a few movement differences can be noticed. Thus the animation by this technique gives very smooth animated movement. All fifteen postures with the technique will be illustrated in PNC 2009.

2.2. Motion capture.

The motion capture technique has been brought in order to make the movement become more natural. The technology utilizes 42 sensors and 16 cameras. The sensors are placed on an actor body suit and all movements are detected and recorded by the cameras. The recorded data is then processed and mapped into the model skeleton. The results still have noises which cause the movement of the animation is not displayed in the right posture. The sample will be shown in the consortium.

Step 3. Render by Grid Computing

These frames must be rendered to build sequences of images for composing an animation. It would take more than thousands of hours to render all of these scenes. To shorten the rendering time, Grid technology is applied to do the job. Thus, all frames are rendered completely within approximately ten hours only.

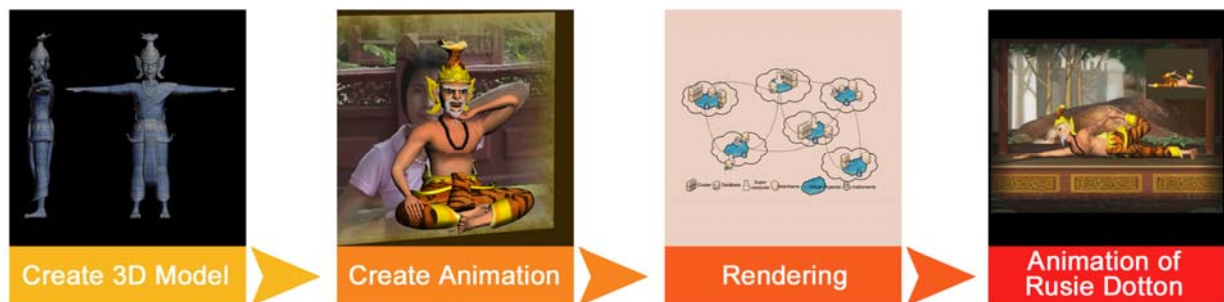


Fig 1. Three steps of the developing process.



Fig 2. Snpshots of hermit's body twist "rusie dotton" animation.

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References

- [1] Pennapa Subjaroen. 2006. The hermit's body twist Rusie Dotton. Bangkok: Samjaroen Panich Co.,Ltd.
- [2] Rampaipan Kaewsuriya. 2007. Wat Pho guide book. Bangkok: Amarin Printing & Publishing Public Company Limited.
- [3] The Institute of Thai Traditional Medicine, Department for Development of Thai Traditional and Alternative medicine Ministry of Public Health. 2003. Thai Exccercises Rusie Dotton 15 Postures. Bangkok: The War Veterans Organization of Thailand Press (in Thai).
- [4] Asia Pacific Regional Committee For Memory Of The World (MOWCAP) Report To MOW International Advisory Committee Meeting 2009
<http://portal.unesco.org/ci/en/files/28869/12458342473MOWCAP.doc/MOWCAP.doc>
- [5] “Social Computing” from Wikipedia.org at
http://en.wikipedia.org/wiki/Social_computing