#### Generating Virtual Wire Sculpture Art from 3D Models

Chih-Kuo Yeh, Thi-Ngoc-Hanh Le, Zhi-Ying Hou, Tong-Yee Lee

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Presenter: Le Thi-Ngoc-Hanh



#### What is Wire sculpture?







# Application of Wire Art

# Furniture design



# Wire-wrapped jewelry



# Wire sculpture art



# Motivation

#### **Motivation**



- Imitate artist's design
- Take as input a 3D model, directly generate wire sculpture art with a smaller number of wires.



# The proposed system pipeline



# 3D mesh to Rough wire





#### Remove the less important edges!



## **Feature vertices**



## 3D mesh to Rough wire



# Wire composition

# Wire composition



#### **TSP** – **Traveling Salesman Problem**



(Source Internet)

TSP connect 3D line segments to construct a rough wire in a minimum number of wires.





Our m-TSP



# m-TSP by Ours



Slide 21

# Wire art smoothing



$$argmin_{v_i} \sum_{i=3}^{n} \parallel (v_i - v_{i-1}) - (v_{i-1} - v_{i-2}) \parallel^2 + \alpha \sum_{i=1}^{n} \parallel v_i - v'_i \parallel^2,$$



## Wire art smoothing















Thanks for your listening.