Collaborative 3D modeling system based on blockchain

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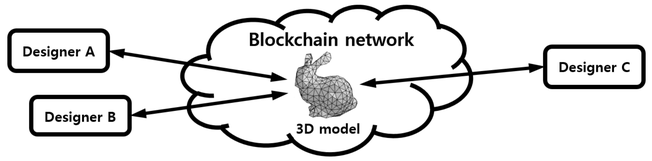
Code and **video** are available
http://sgvr.kaist.ac.kr/~hmpark/Paper/C3DMB

Introduction

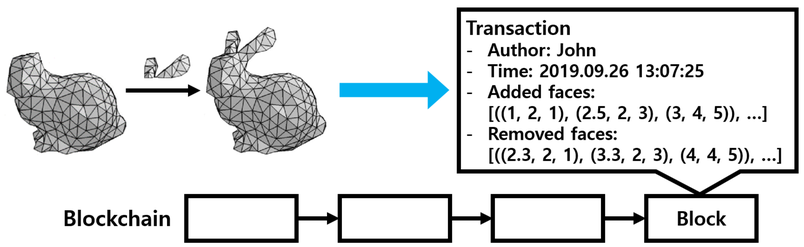
Nowadays, **collaboration** became important in 3D modeling

- Modeling tools(e.g. Blender): Not support collaboration yet
- Traditional VCS(e.g. Git): Depends on the central server



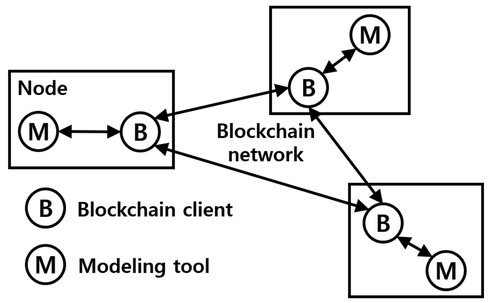
So we propose new **collaborative 3D modeling system** based on **blockchain technology**, which enables us to share an immutable history of modification history of 3D model.

Key idea



- Regard the modification of the mesh as a **transaction**
- Use the **blockchain** as a database of modification history

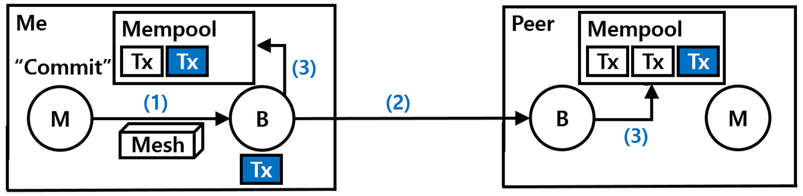
Network



Each node(i.e designer or miner) consists of one or multiple modeling tools and a blockchain client. Two things are separated from each other for **modularity**.

Operations

Commit

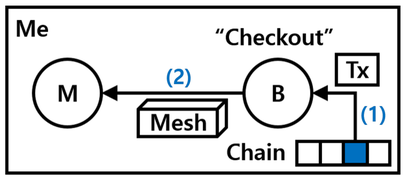


(1) Modeling tool sends the mesh to the blockchain client
(2) Blockchain client creates a **tx(transaction)** and broadcast it
(3) Each node stores tx in **mempool**, temporary storage for the **tx**s waiting for being included in a block

Mine

(1) Miner **mines** a new block containing **tx**s in the mempool
(2) Blockchain client broadcast the block
(3) Each node appends the block to its chain

Checkout



(1) Blockchain client constructs the mesh from selected **tx**
(2) The mesh is sent to the modeling tool

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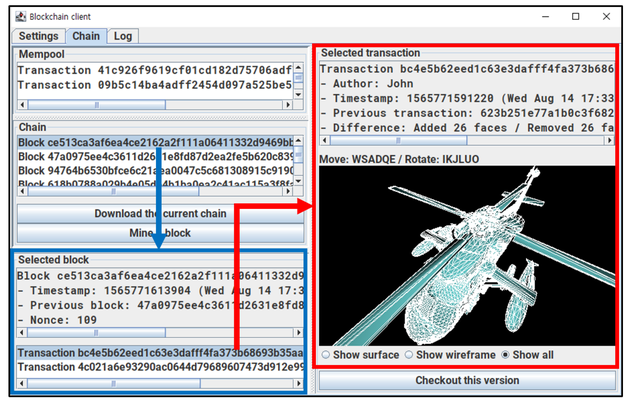
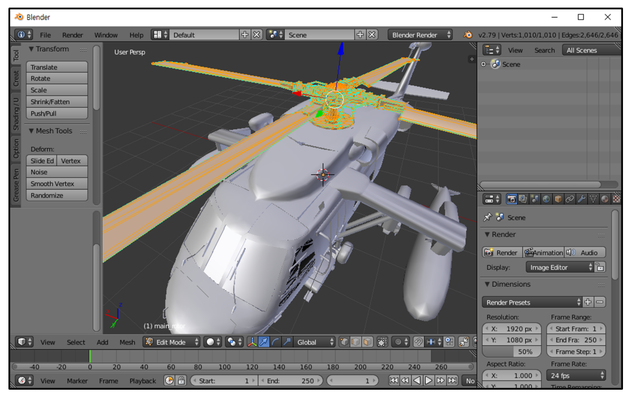
Implementation

Our blockchain client



Modeling tool (Blender)



We have implemented a prototype for simulating our approach. Our blockchain client implements the following features:

- **Commit**, **mine** and **checkout** operation
- Get the current version of the chain from other peers

To see the code and the video, please visit the link at the top of the poster.

Acknowledgements

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