

Individual Contribution Report

(Group project)

Project Title: EVE

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Role: 3D Modeller & FX Artist

Submission Date: March 28, 2025

1. Overview of My Role

In this group project, I was responsible for 3D modelling, cloth simulation, FX creation, and rendering integration. I used Autodesk Maya to model key assets including a smartphone and a handgun. I also implemented a dynamic cloth simulation for curtains using Maya's nCloth system.

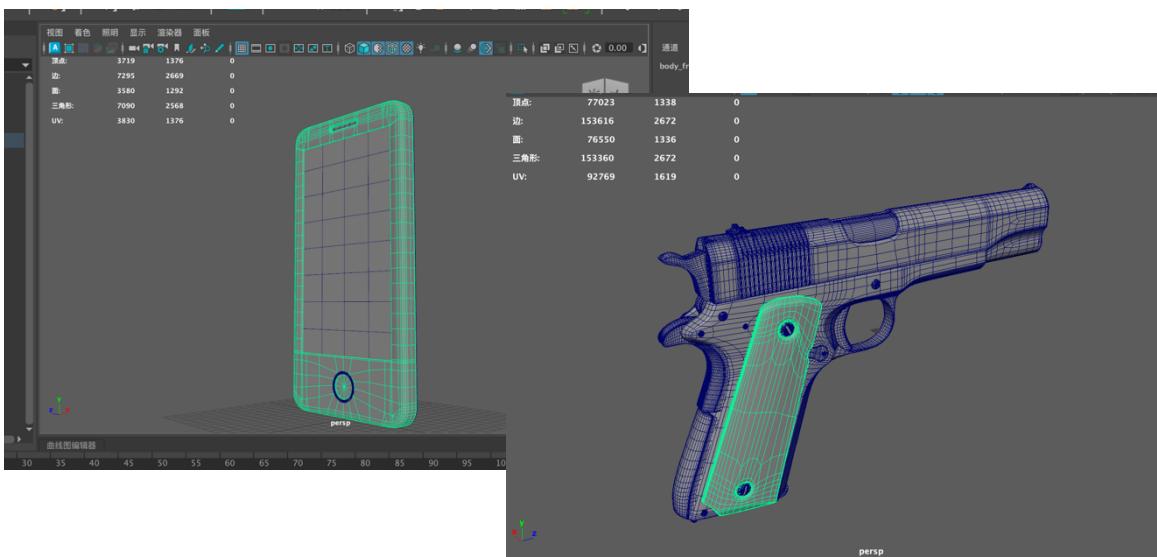
For visual effects, I used Houdini to simulate a mid-scale explosion and floating dust particles in the environment. These effects were exported in VDB format and imported into Maya for rendering using the Arnold renderer.

2. Detailed Breakdown of My Work

2.1 Work Featured in the Final Group Artefact

Modelling – Smartphone & Gun (Maya)

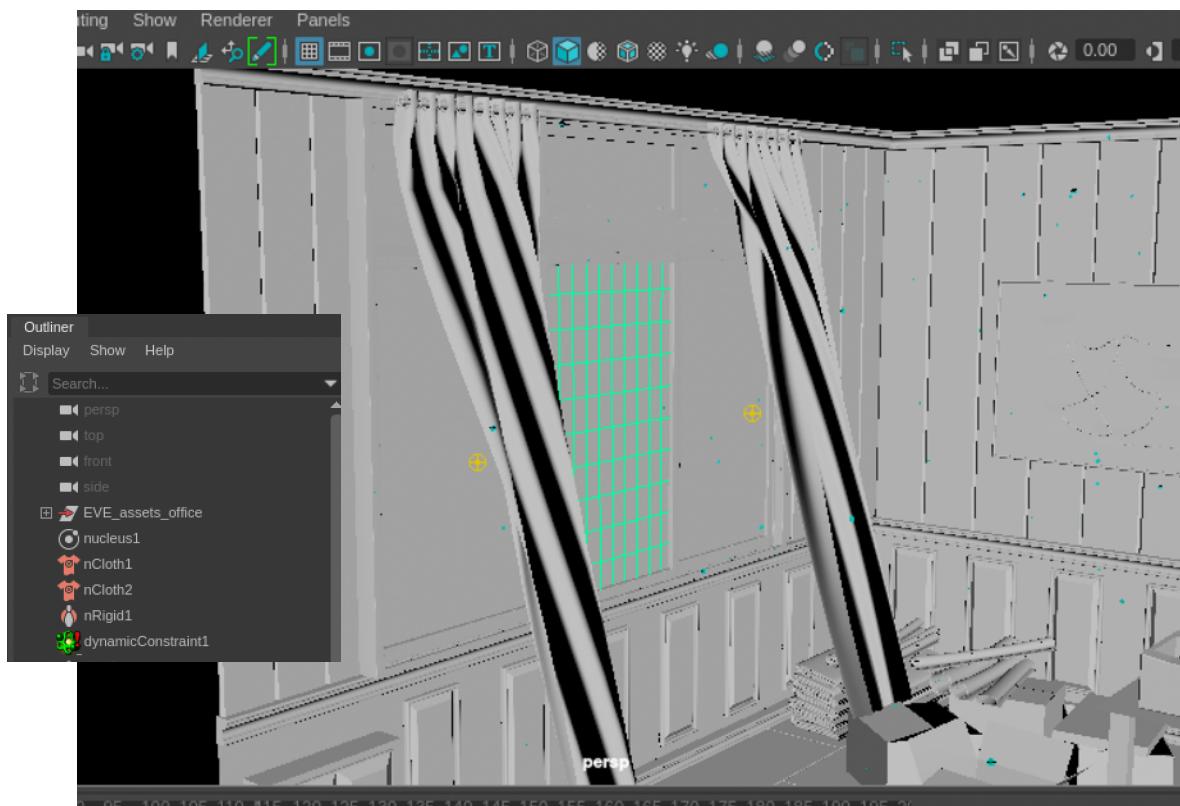
- Created two hero assets:
 - A modern smartphone (iphone) with detailed buttons, camera module, and screen geometry
 - A realistic handgun with moving parts such as the slide and magazine
- Used real-world references to maintain accuracy and proportion
- Maintained clean topology and efficient edge flow for optimal rendering and rigging compatibility



2.1.1 Cell phone and Pistol modelling

Cloth Simulation – Curtains (Maya nCloth)

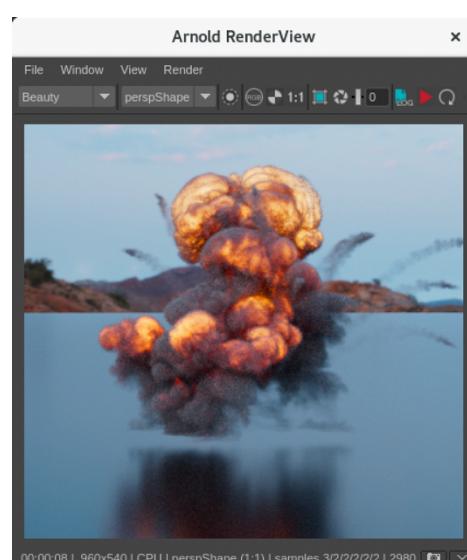
- Applied nCloth dynamics to simulate natural movement of curtains in a lightly windy indoor environment
- Set up wind and gravity fields to create soft fabric motion
- Exported the cache for stable playback during lighting and rendering stages



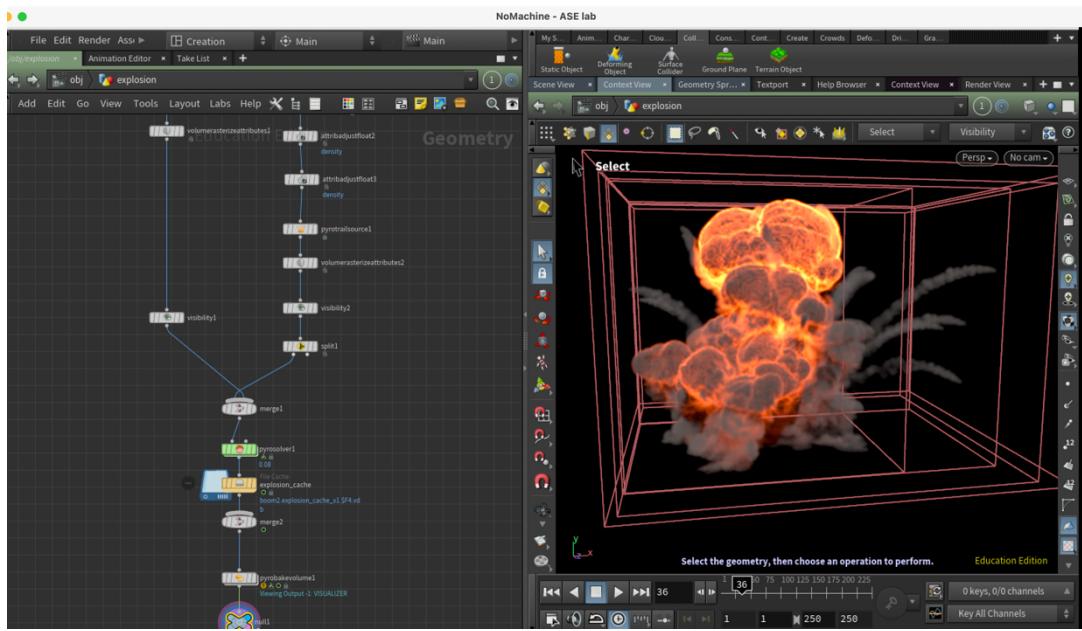
2.1.2 Curtain fabric solution

FX – Explosion & Dust (Houdini)

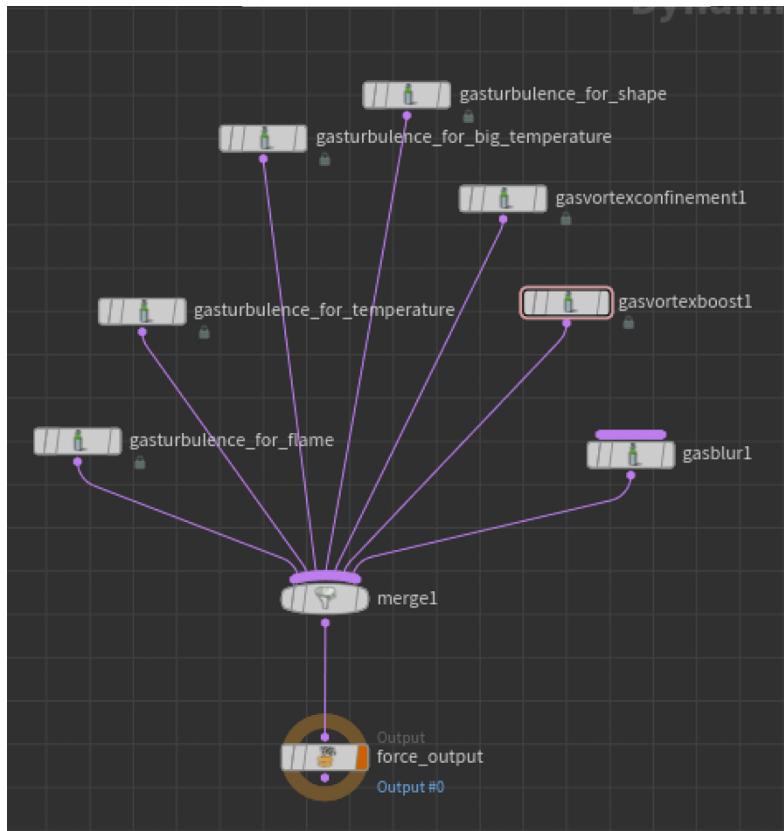
- Used Pyro Solver to simulate a mid-scale cinematic explosion, including fire, and smoke
- Created a secondary dust particle system to enhance atmosphere and realism
- Balanced simulation resolution and voxel size to manage render performance



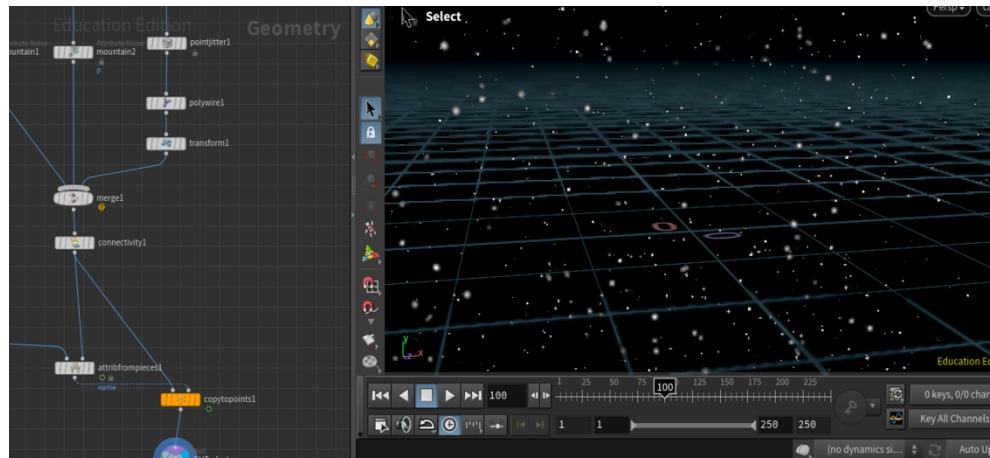
2.1.3 Explosion effects with Arnold



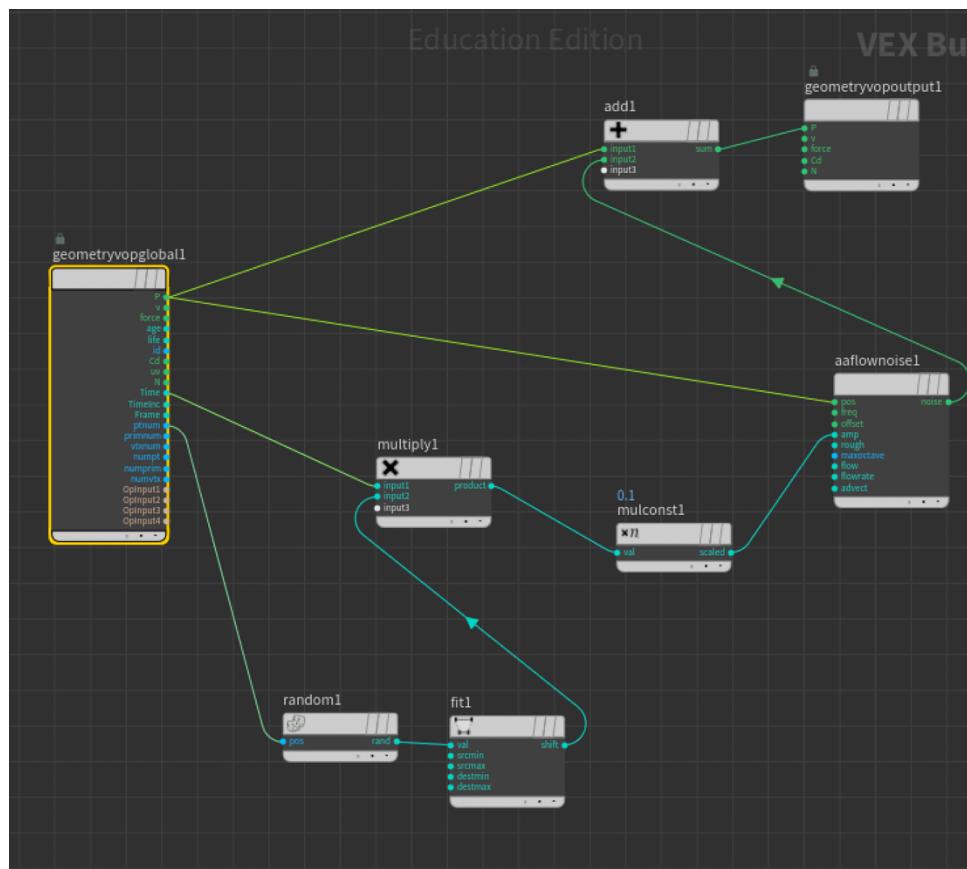
2.1.4 Houdini Creates Explosive Effects



2.1.5 Pyro solver node regulates temperature flame and density



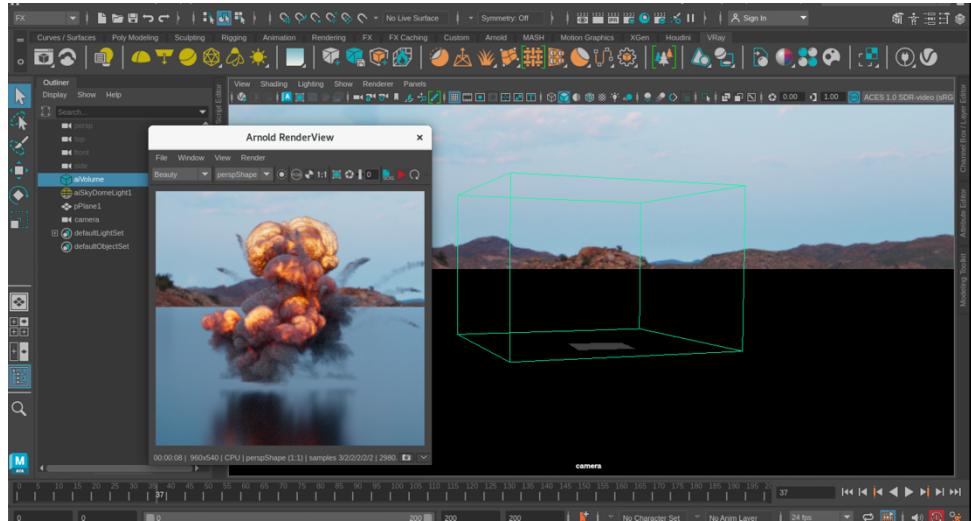
2.1.6 Dust effects in houdini



2.1.7 Meking dust mesh nodes in houdini

FX — Export & Integration (VDB Workflow)

- Exported the Houdini FX simulations as .vdb files
- Imported VDBs into Maya using Arnold's Volume node
- Fine-tuned shaders and lighting to ensure volumetric elements blended naturally with the environment

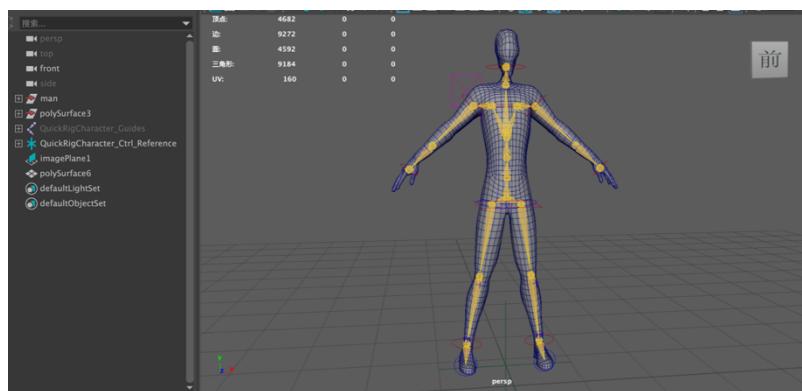


2.1.8 Houdini exported vdb, imported to maya aiVolume rendering

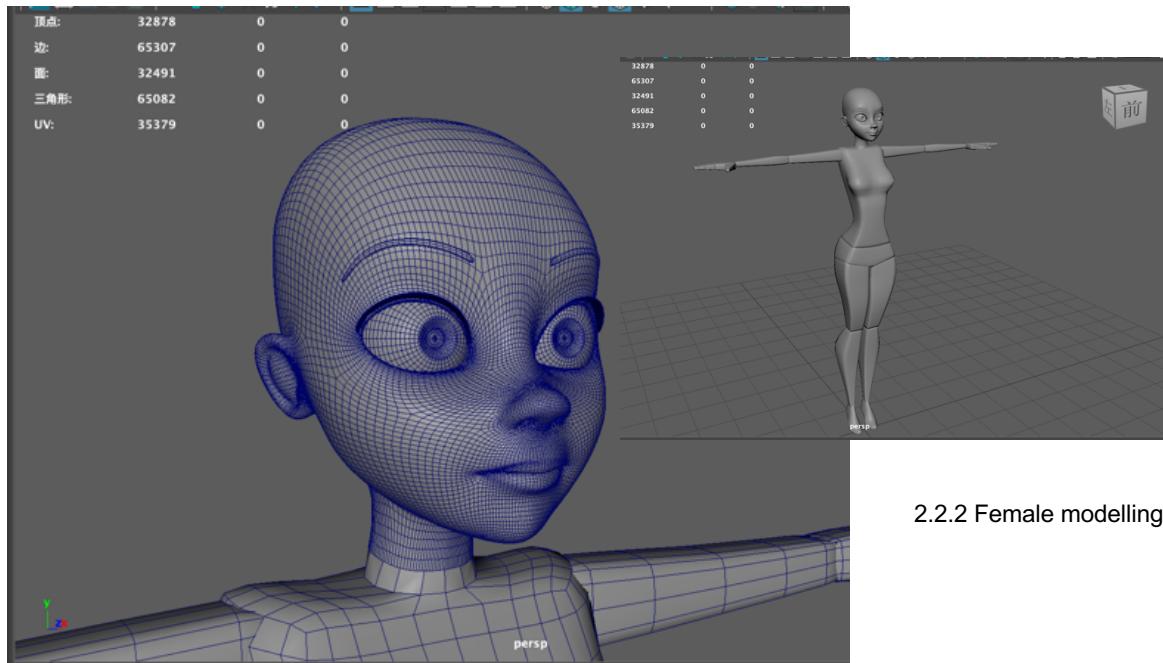
2.2 Work Not Included in the Final Artefact

Character Base Models – Female & Male Protagonists

- Modelled early versions of both main characters (female and male)
- Each model included base topology and basic facial geometry for future rigging
- Developed clean edge flow and quad-based topology for animation-ready use
- Due to changes in narrative direction and timing constraints, these character models were not used in the final video



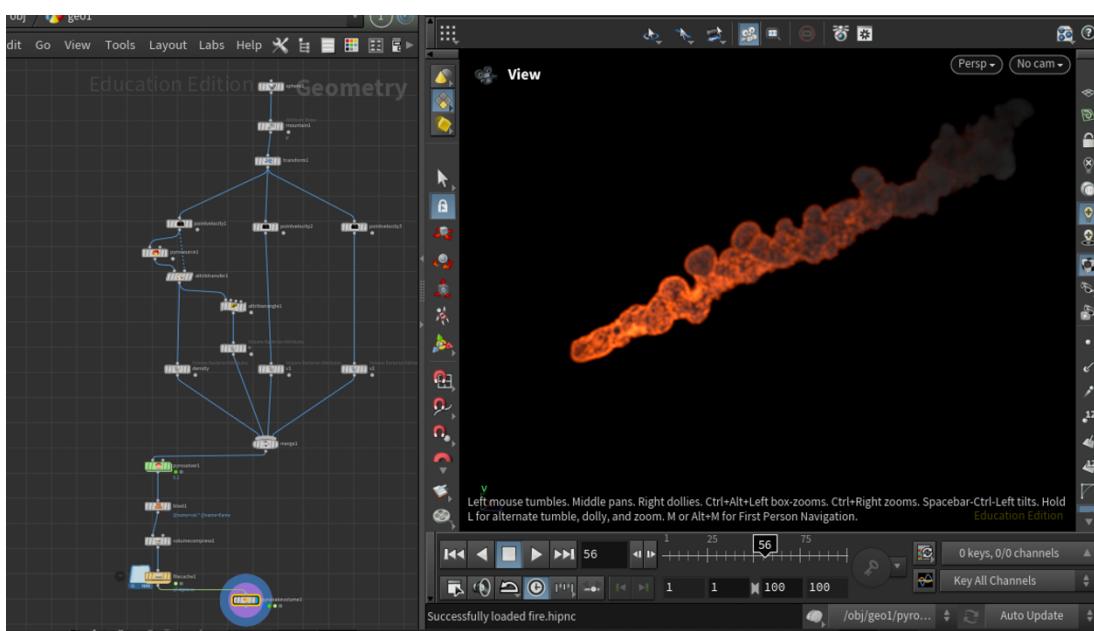
2.2.1 Male modelling



2.2.2 Female modelling

Meteor Model – Earth Impact Sequence

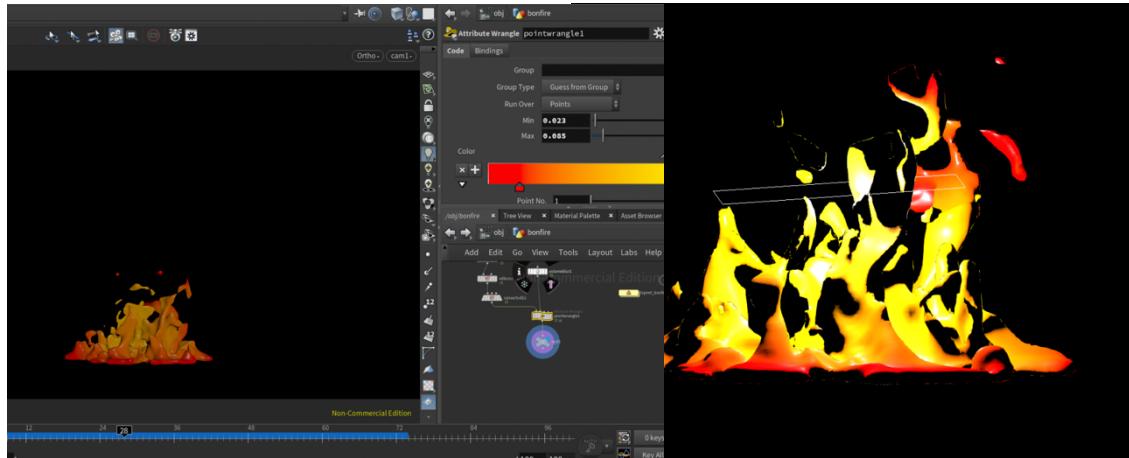
- Designed a stylized meteor model intended for a planned "meteor impact" scene
- Created layered geometry including rocky surface and fiery trail base mesh
- This scene was cut in the later stages of production and did not appear in the final cut



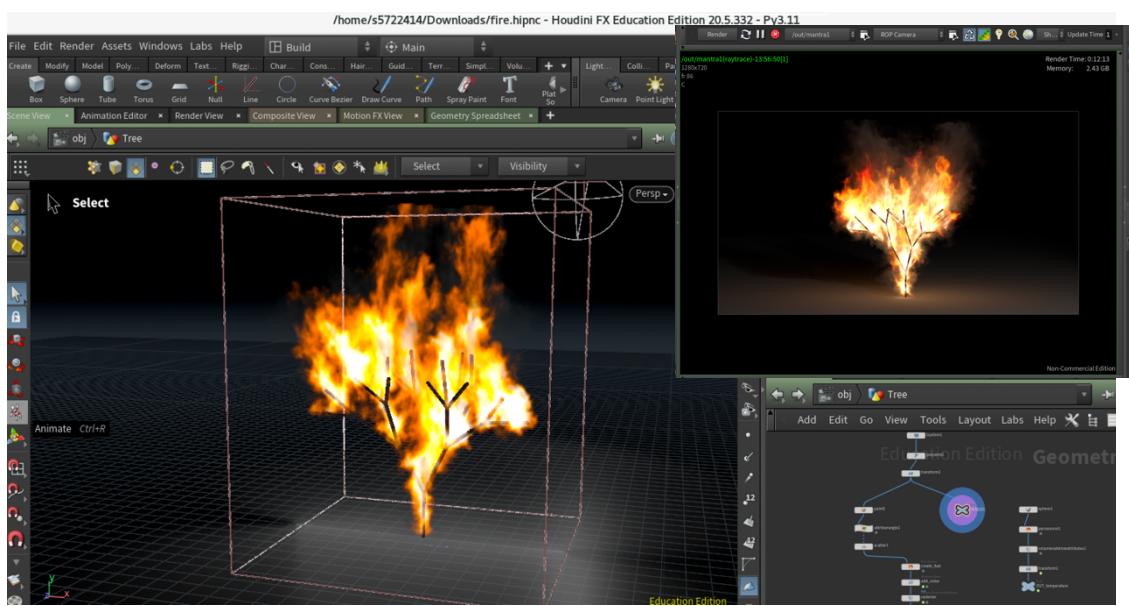
2.2.3 Houdini node generates meteorites

2D Fire & Burning Flame Tests

- Initially negotiated the creation of 2D style animation, creating multiple 2D frame-by-frame flame elements as conceptual visual effects
- Also developed simple 3D burning flame simulations using Maya fluids
- These were initial style tests and ultimately replaced by Houdini Pyro FX in the final artefact



2.2.4 2D fire from houdini



2.2.5 Burn tree from houdini

3. Software & Tools Used

Software	Purpose
Autodesk Maya	Asset modelling, cloth sim, rendering
Houdini	VFX simulations (explosion, dust)
Arnold	Volume rendering (VDBs), lighting
VDB	File format for volume data between Houdini and Maya

4. Reflection & Learning

This project deepened my experience in FX integration and multi-software pipelines. I learned how to manage VDB workflows efficiently and how to troubleshoot issues related to volume rendering in Arnold. During the curtain simulation, I faced problems with mesh intersections, which I resolved by tweaking nCloth thickness and solver settings. Overall, I developed stronger skills in simulation control, scene assembly, and rendering optimization, and gained more confidence in technical direction tasks.