# 팀명 : 비 상

미래자동차공학과 13학번
이민성, 김성모, 김은찬

CAD FINAL PROJECT PRESENTATION

# 목차

# 01 INTRODUCTION

1-1 팀명 선정 배경

1-2 조원 별 맡은 역할

# 팀명 선정 배경

**비상(飛翔)**

공중을 비행한다는 뜻의 비상.

팀이 구상하고자 하는 모델(새)을 상징.

**비상(非常)**

예사롭지 않고 뛰어남을 뜻하는 비상.

공학도로써 우리들의 지향점을 상징.

**비상(飛上)**

높이 날아오른다는 뜻의 비상.

아직은 미숙하지만 가까운 미래에 높은 수준의 학문을 겸비함을 상징.

-Take advantage of a variety of patterns and good power point presentation templates.

# 조원 별 맡은 역할

이민성 :

-운동 설계

-모델링

김성모 :

-서피스 제작

-PPT

김은찬 :

-형상 제작

-키네메틱스

-각 조원이 개개인의 설계 능력에 맞는 역할을 분담함

# 02 MODELING

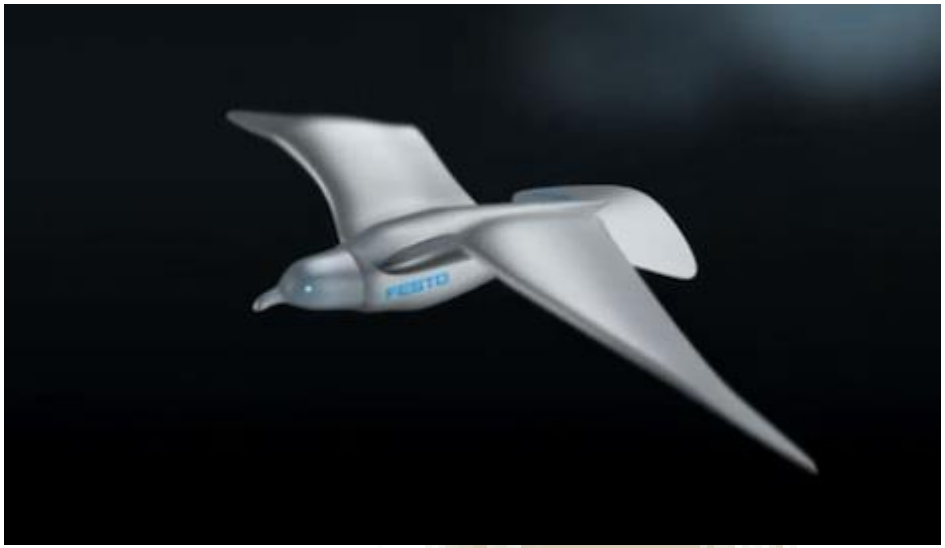
2-1 모델링 주제

2-2 모델링 구상

2-3 모델링 과정

2-4 모델링 구현

# 모델링 주제




-SMART BIRD

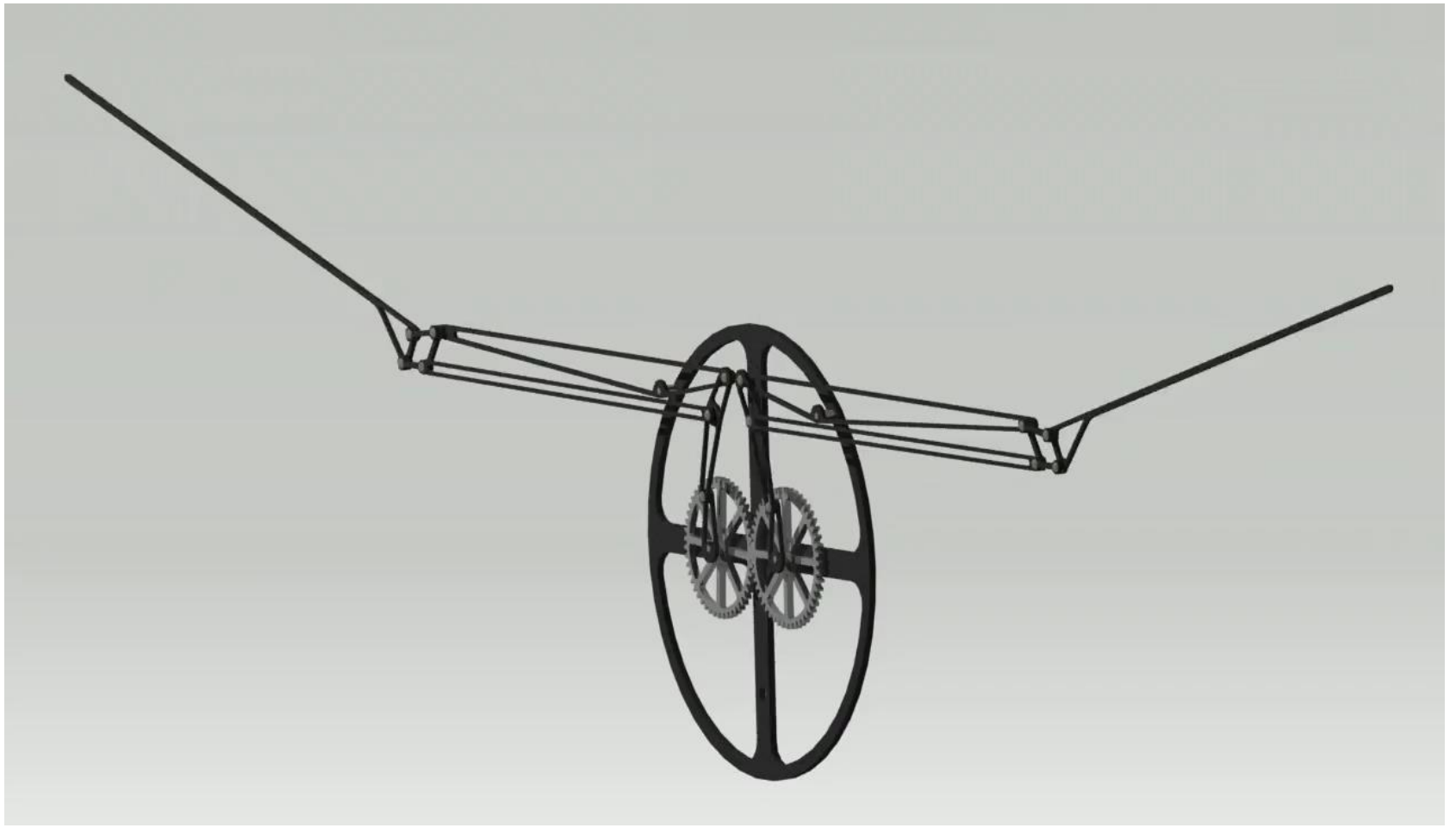
-생체 모방 로봇

-로봇 치곤 단순한 구조로 만들어져 있어서 CATIA에서 구현 가능한 수준.

-참고 :
https://www.youtube.com/watch?v=3SKiH8N8D6w( smart bird 영상)
https://www.youtube.com/watch?v=N9b45bRSlG8( 몸통 기어 )

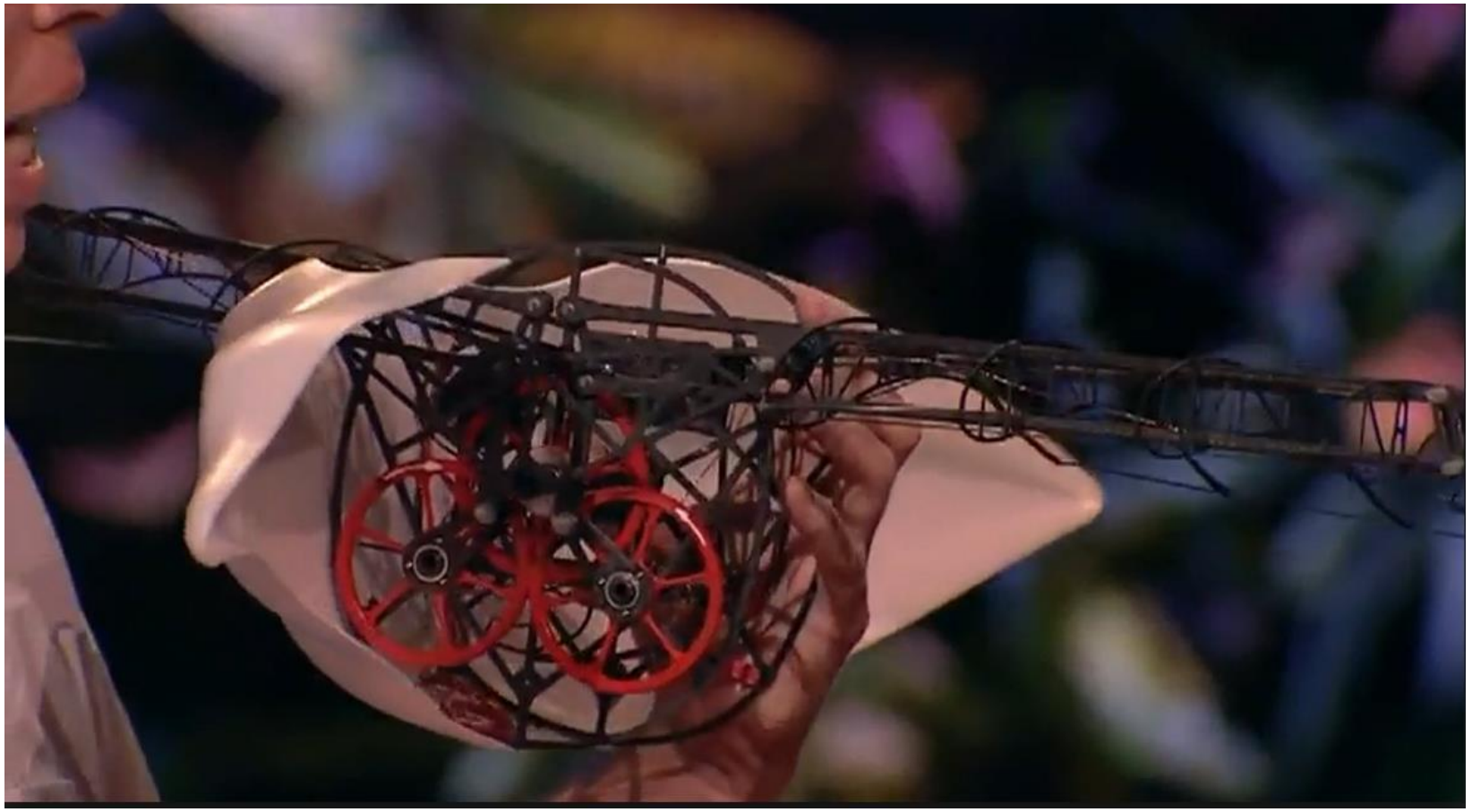
모델링 구상

# 몸통 기어

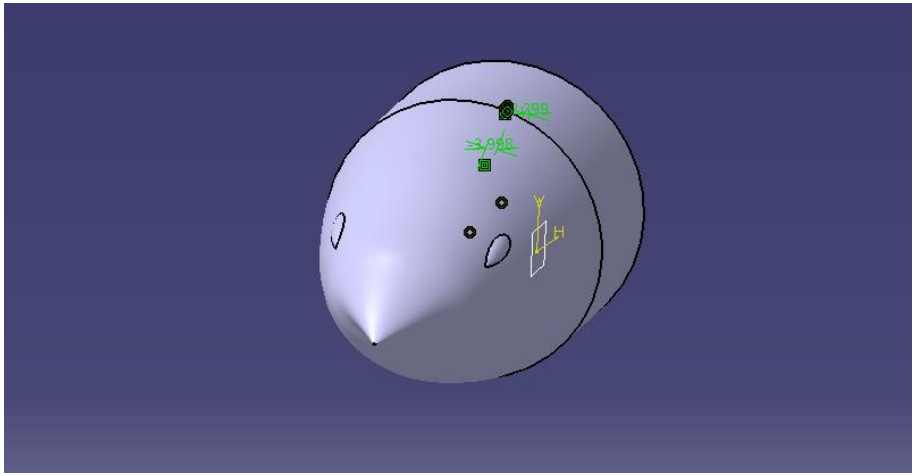


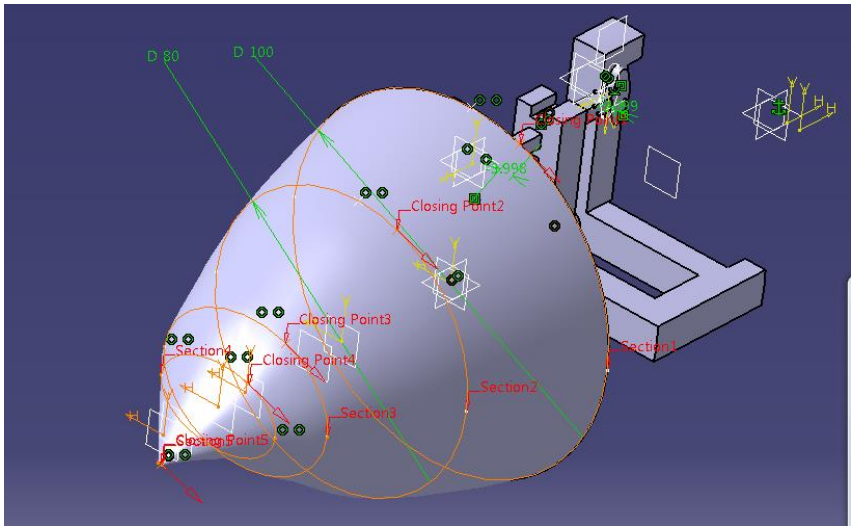
모델링 주제

# 몸통 기어



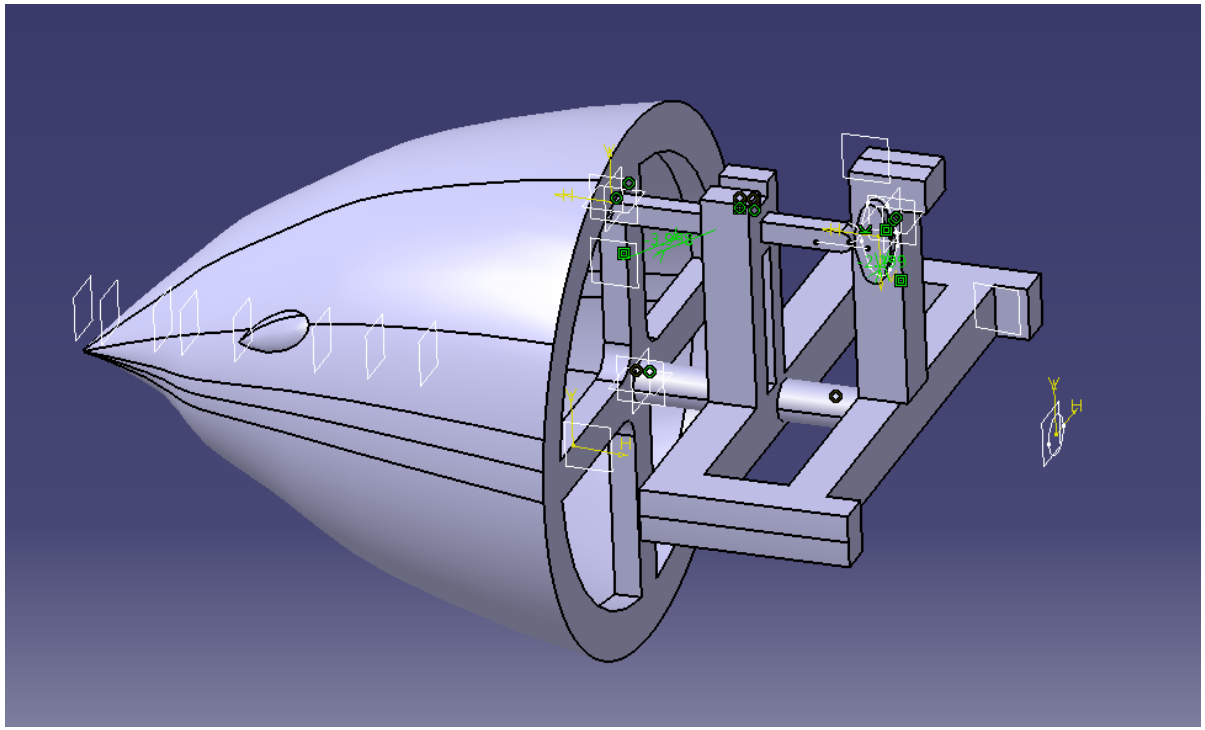
# 머리 모델링 과정

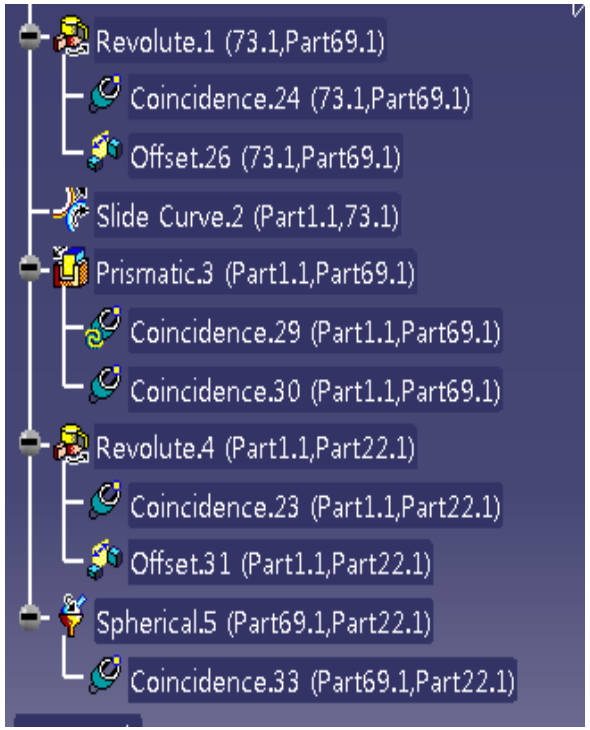





-SMART BIRD의 HEAD PART
-MULTI-SECTION 이용

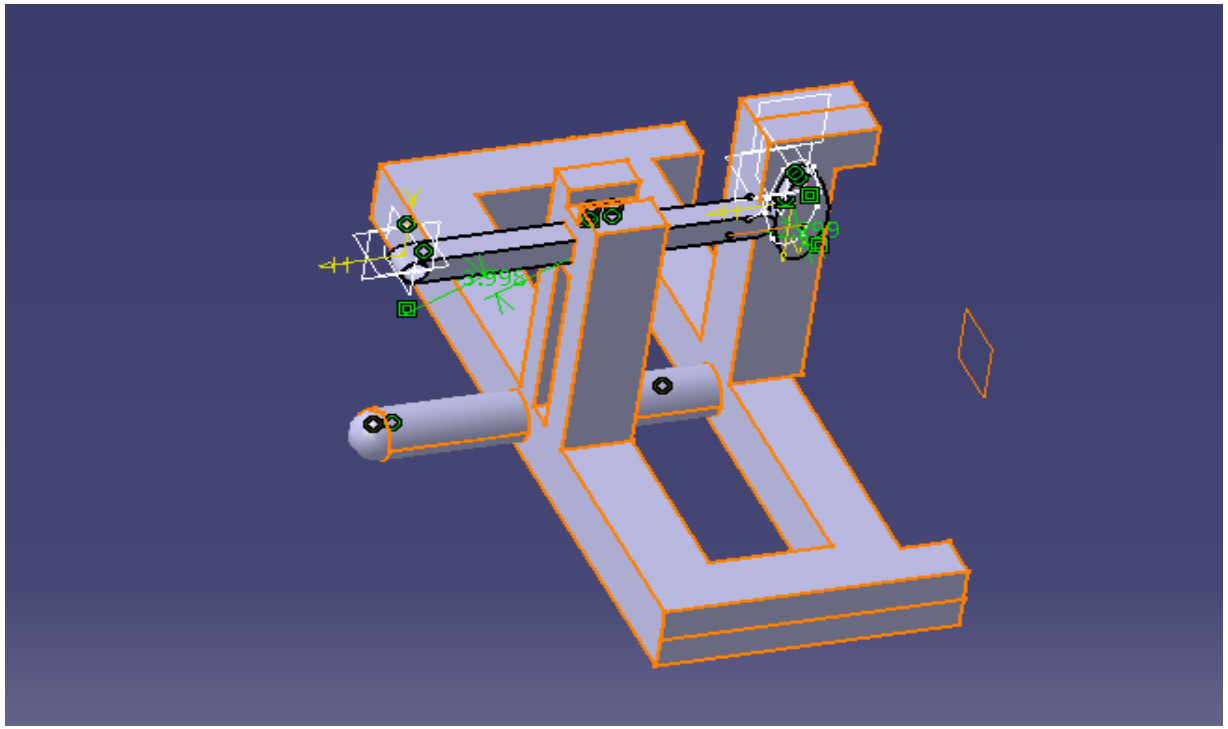
# 머리 모델링 과정

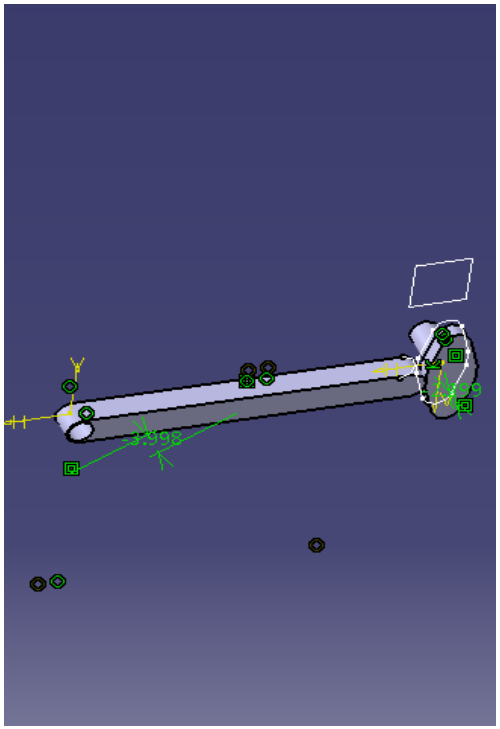





-SMART BIRD의 머리 움직임을 구현
-기어의 회전을 병진운동으로 구현

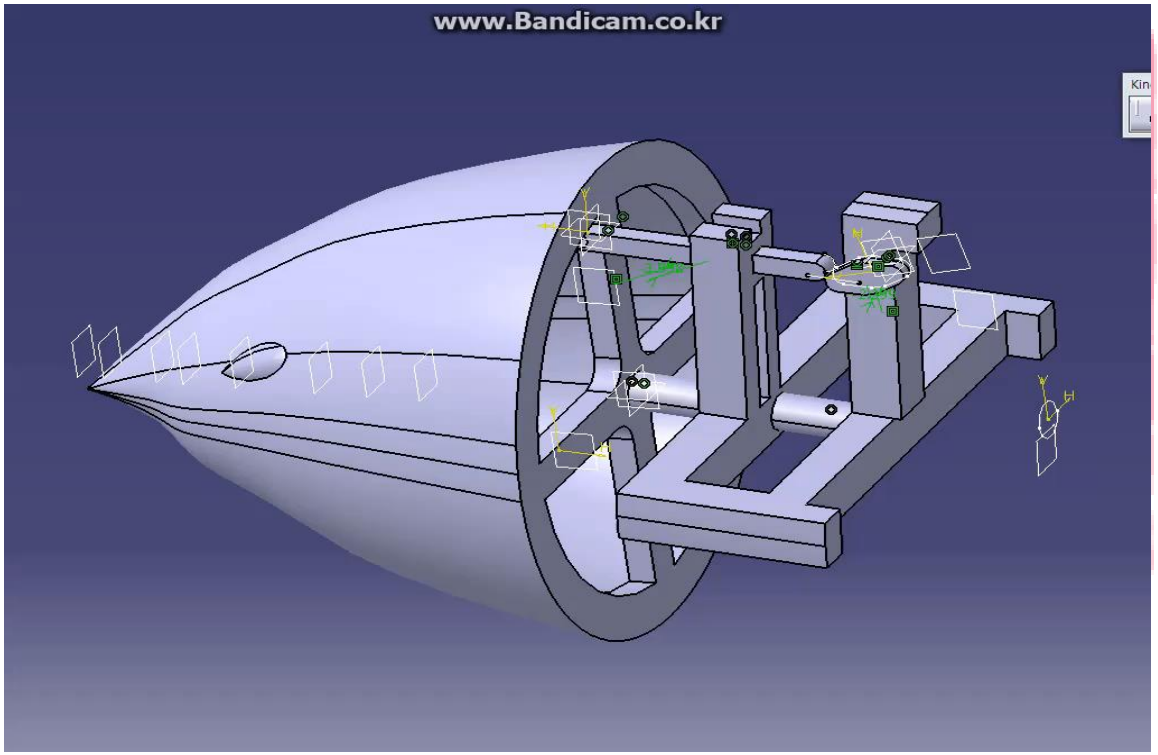
# 머리 모델링 과정





-FRAME을 FIX
-GEAR와 BAR의 운동 (병진/회전 운동)

# 머리 모델링 과정



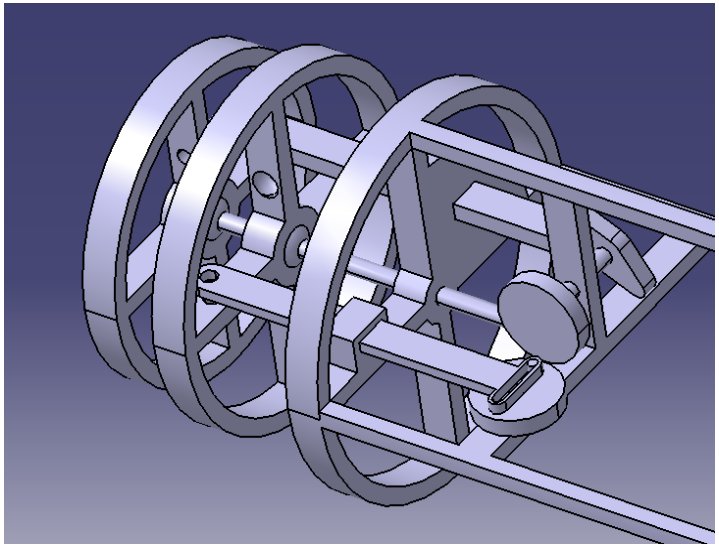

REVOLUTE JOINT -> SLIDE CURVE -> PRISMATIC ->
REVOLUTE JOINT -> SPHERICAL JOINT

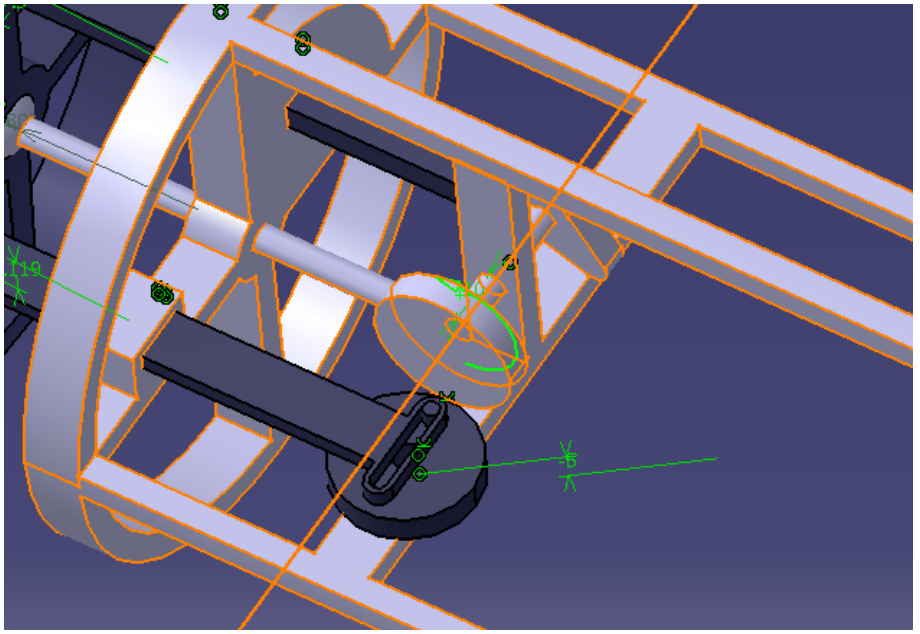
# 꼬리 모델링 과정


자유로운 꼬리움직임 구현

# 좌우운동 모델링 과

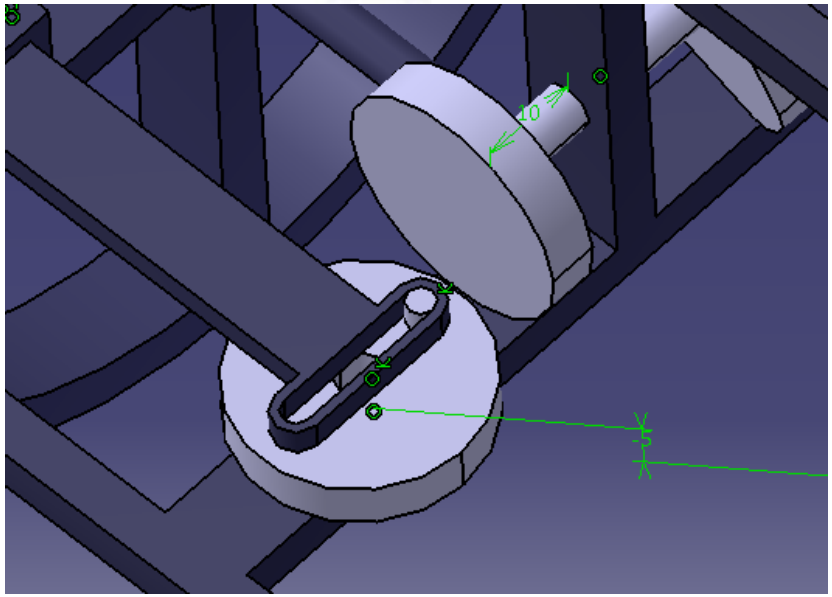
# 정

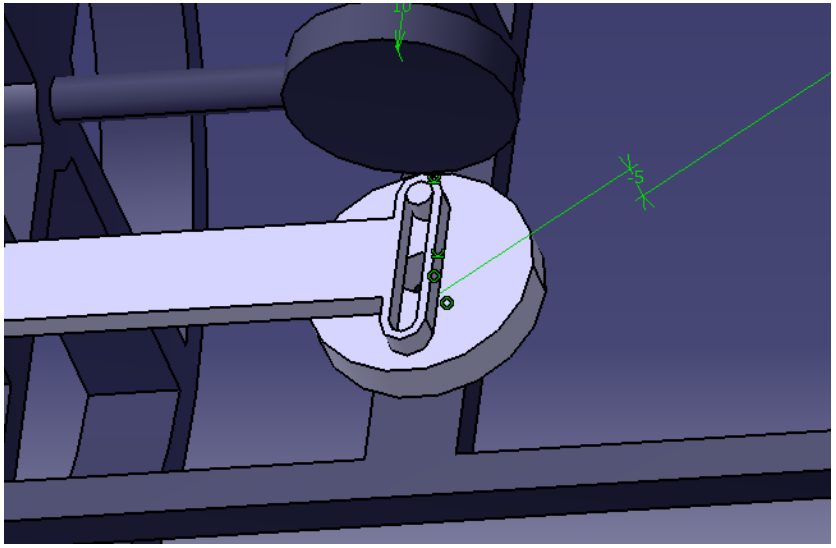




Revolute joint(angle driven)

# 좌우운동 모델링 과정

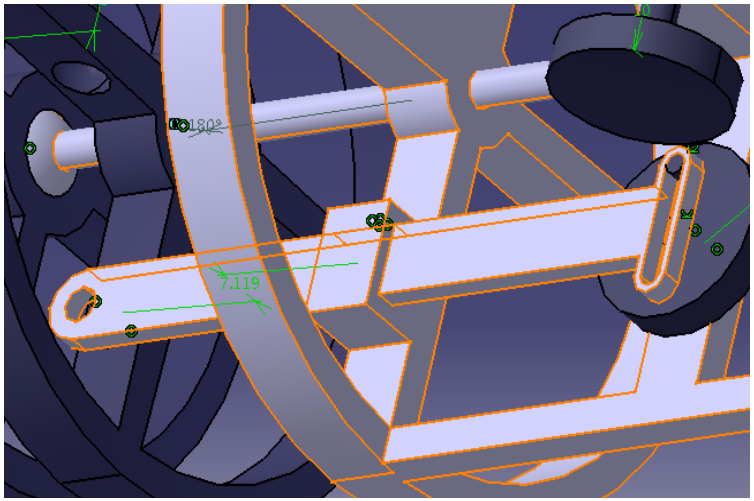


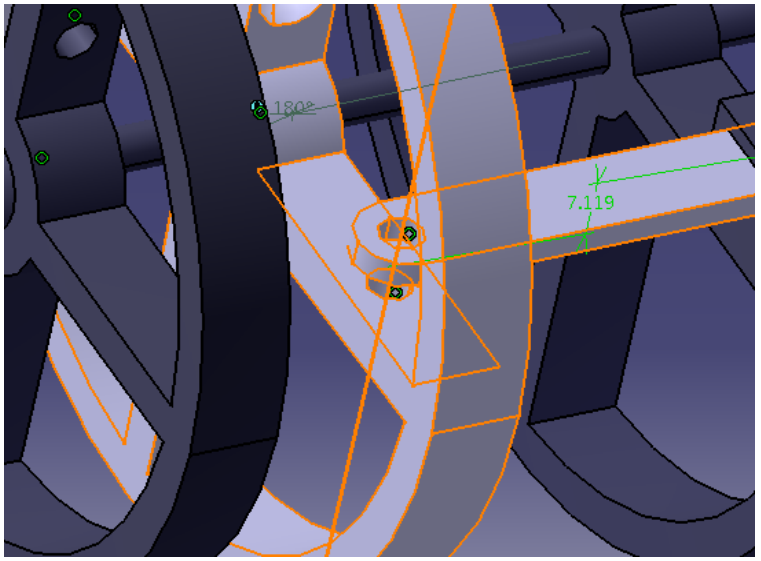




Roll curve joint -> Slide curve joint

# 좌우운동 모델링 과

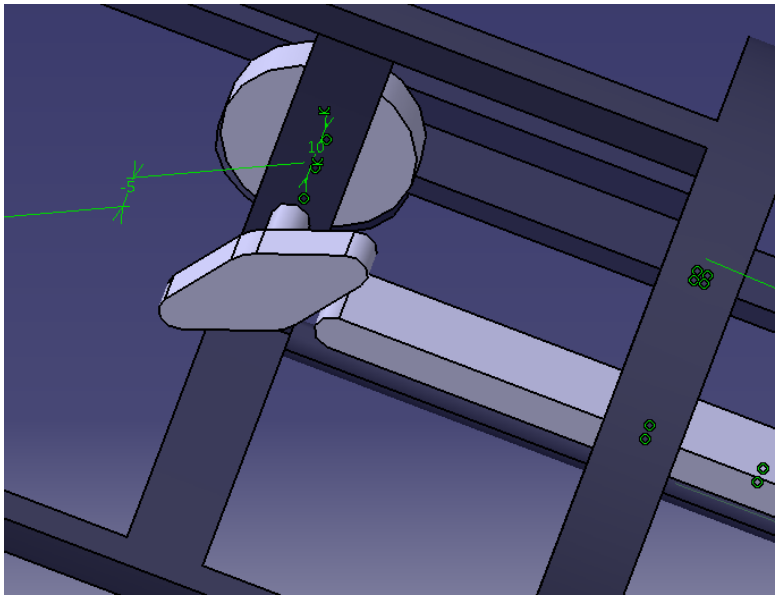
# 정

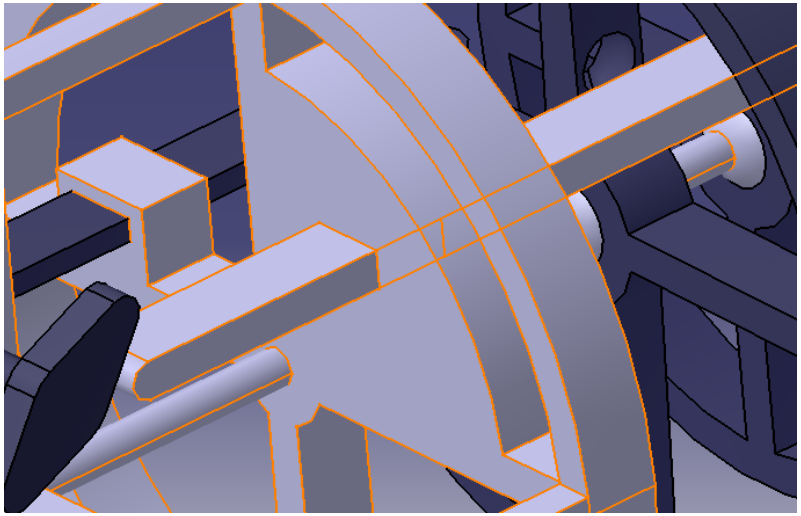



Prismatic joint -> Revolute joint

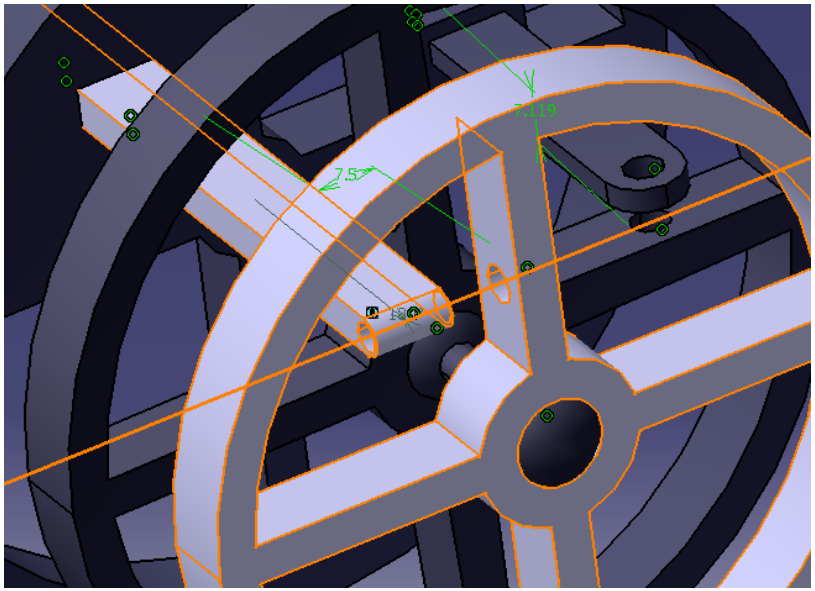
# 상하운동 모델링 과정

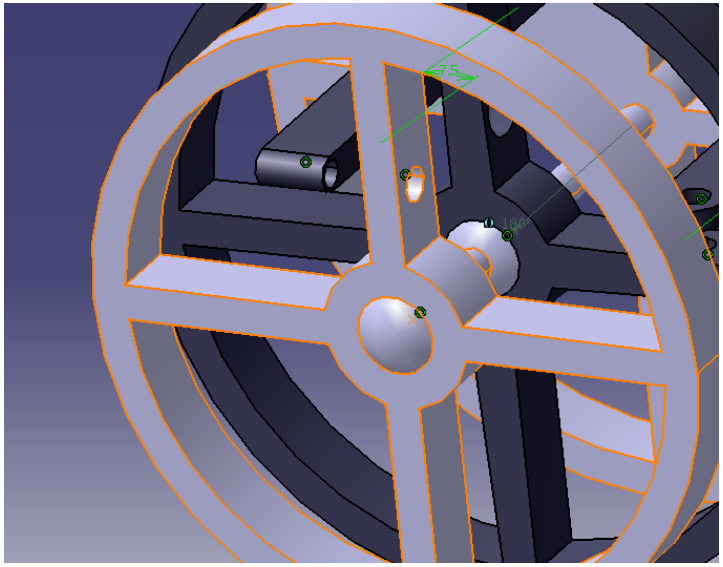




Slide curve joint -> Prismatic joint

# 상하운동 모델링 과정

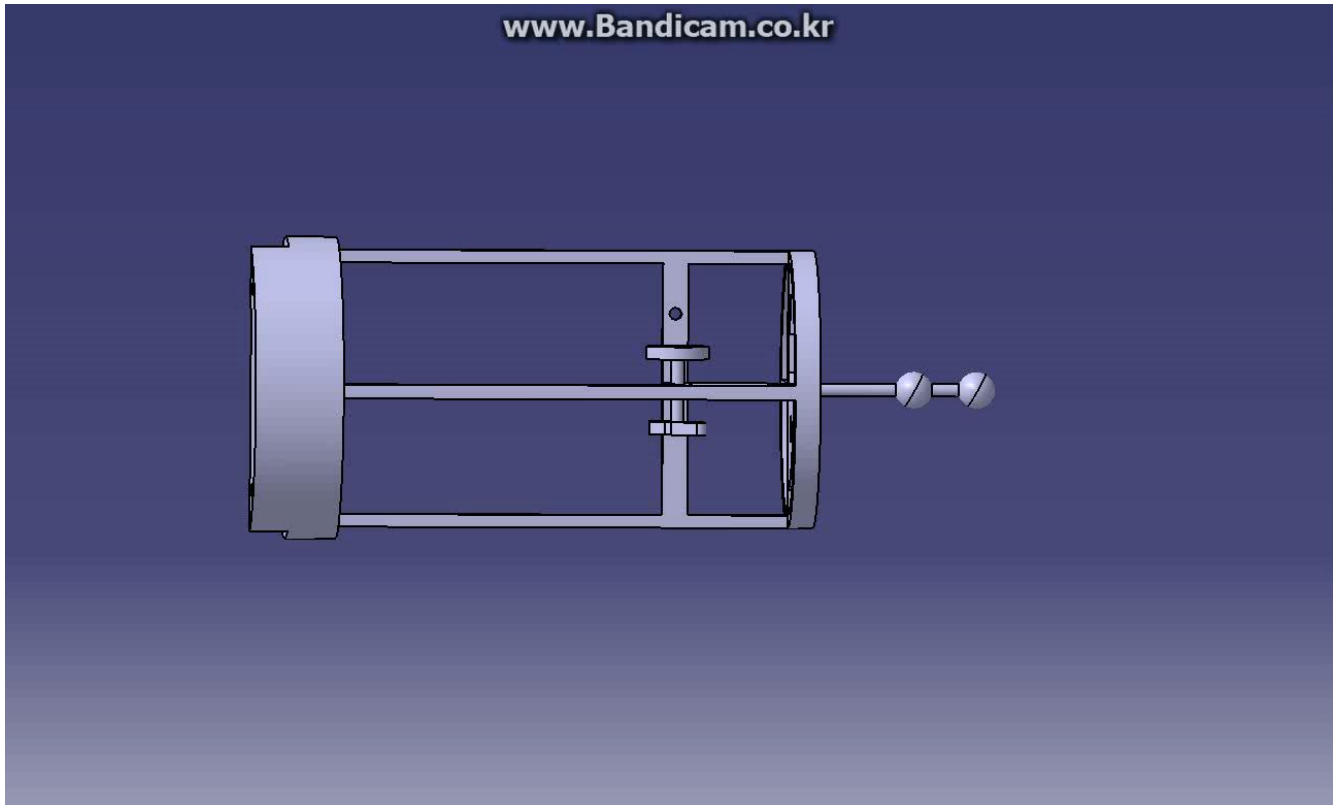




Revolute joint -> Spherical joint

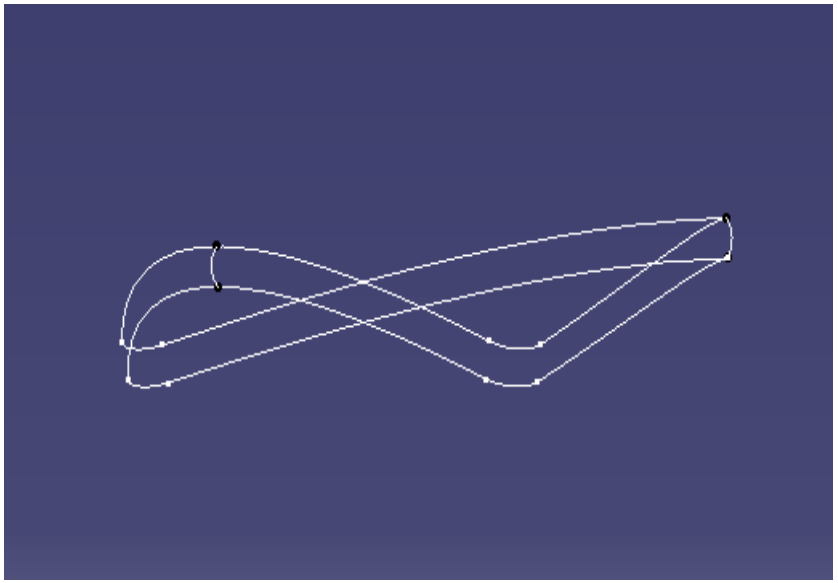
# 꼬리운동 모델링 과

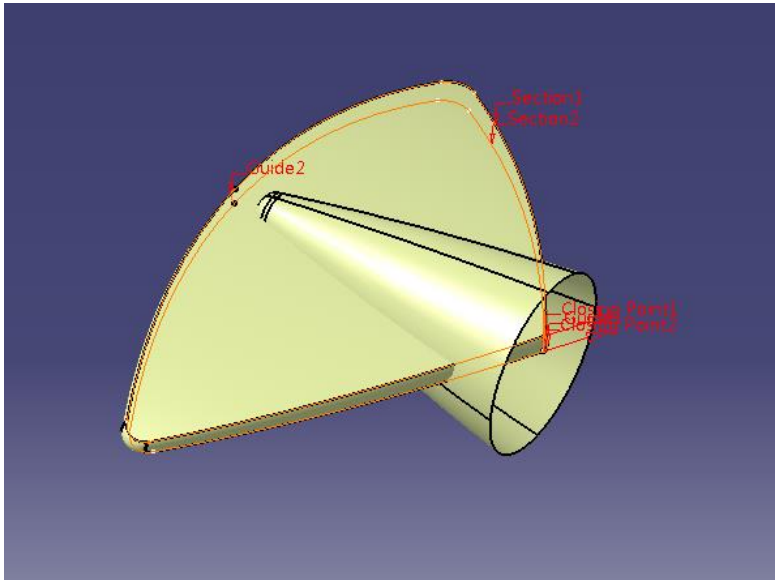
정




꼬리운동 동영상

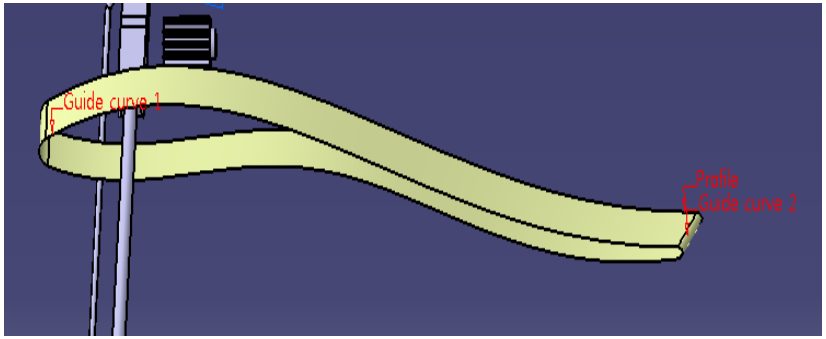
# 모델링 과정

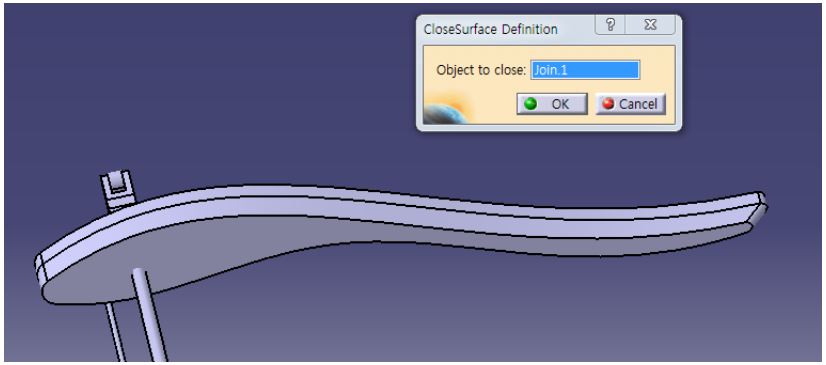


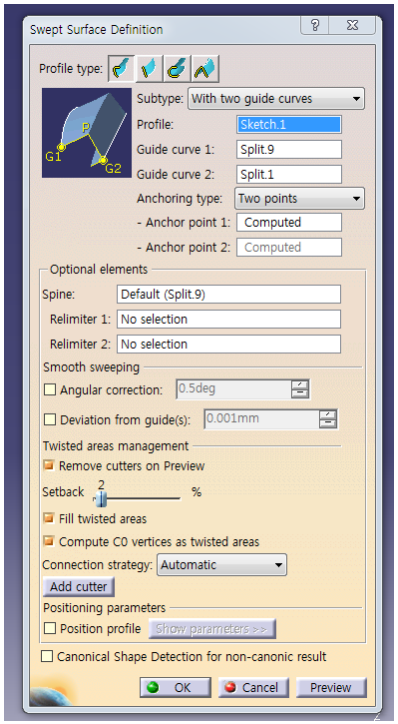



Combine과 Multisection surface 사용하여 Modeling

# 날개 모델링 과정

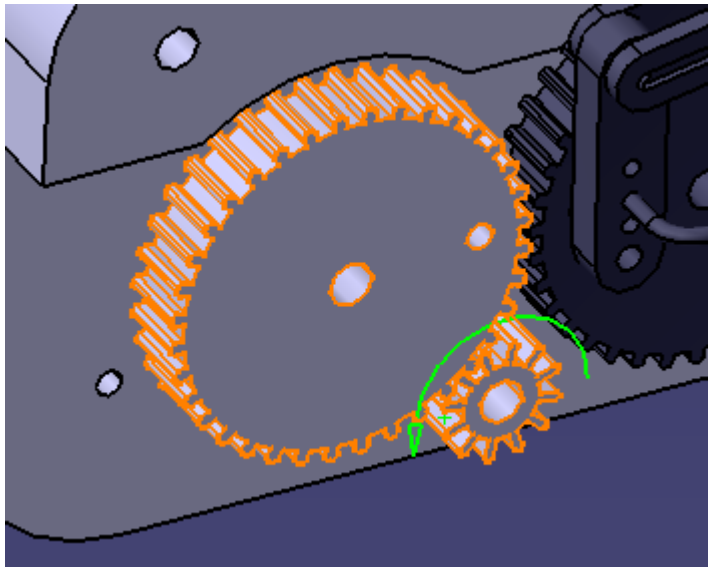


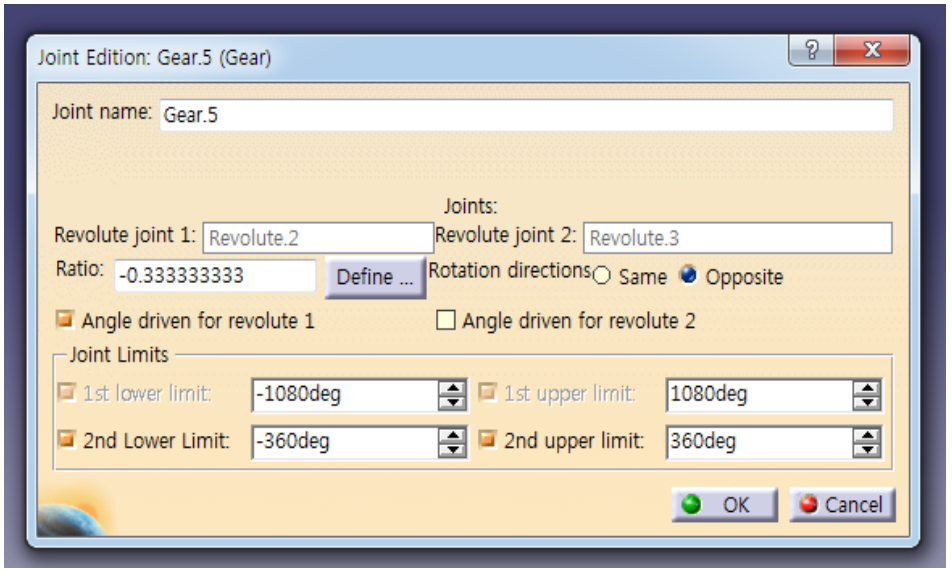




Sweep-Explicit의 two guide curve로 Surface 생성
CloseSurface로 부피 생성

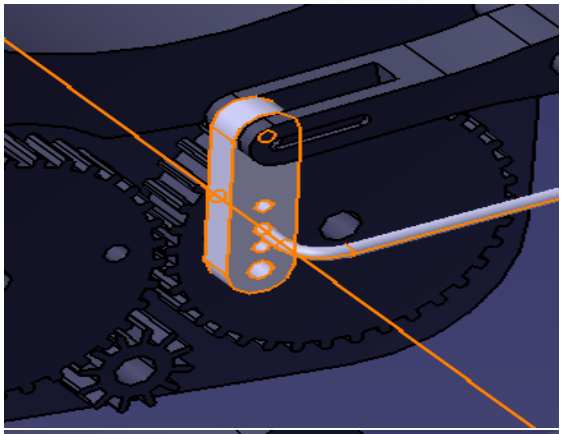
# 날개 Joint 과정

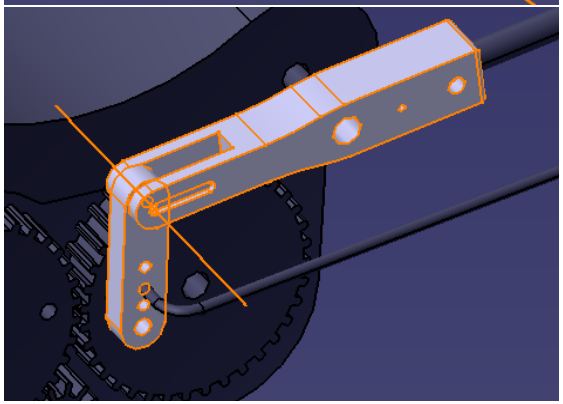


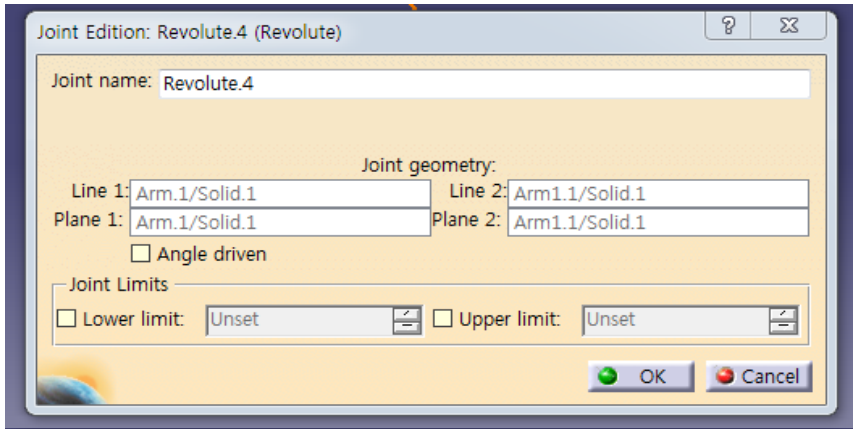


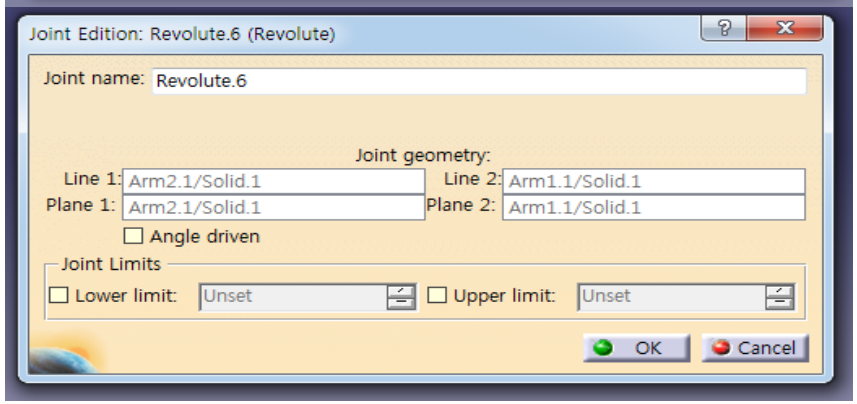

Gear Joint

# 날개 Joint 과정



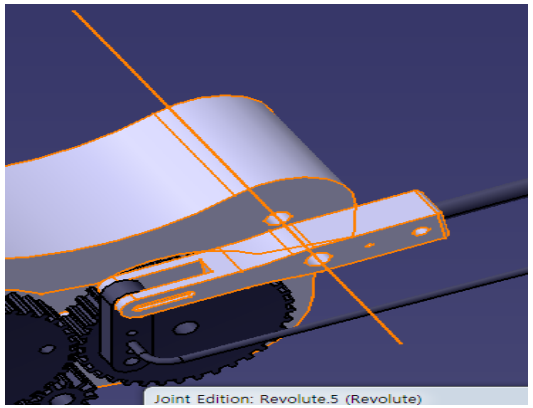


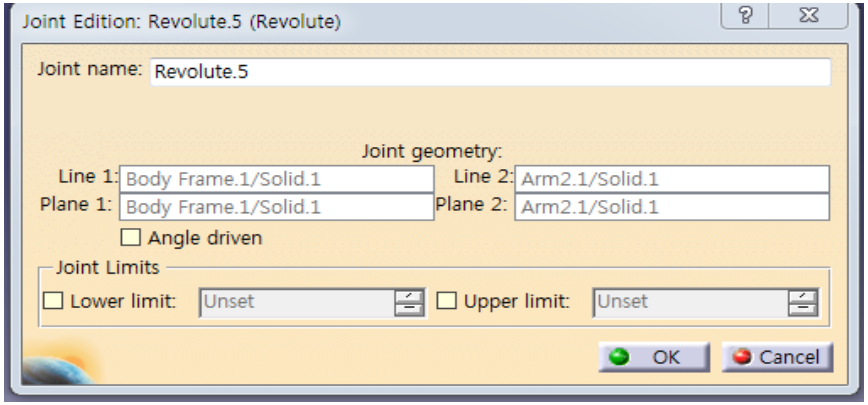


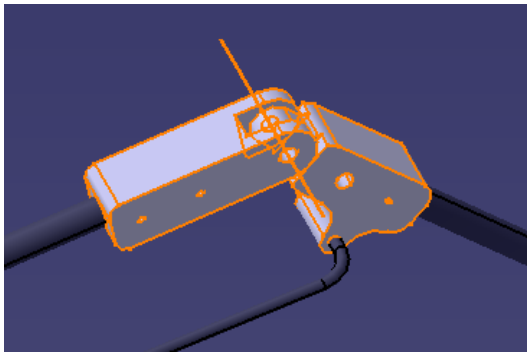



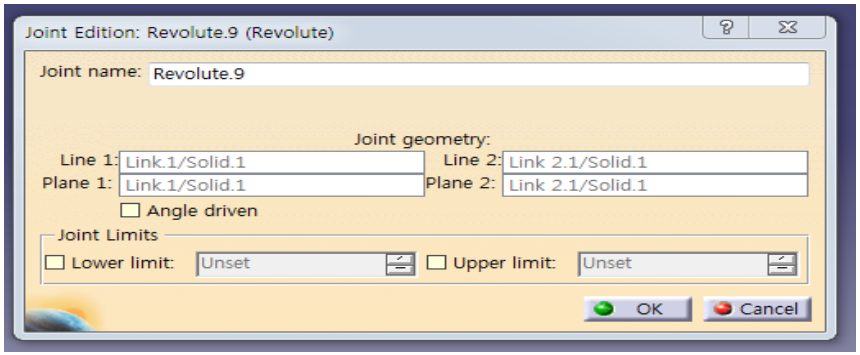

## Revolute Joint

# 날개 Joint 과정



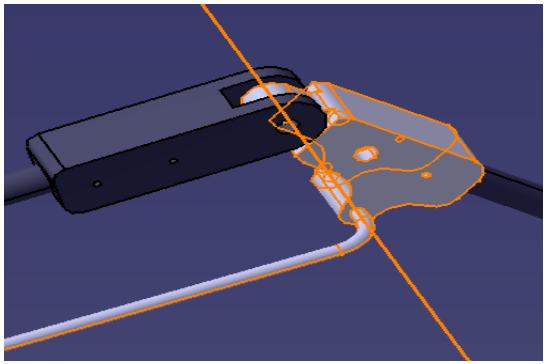



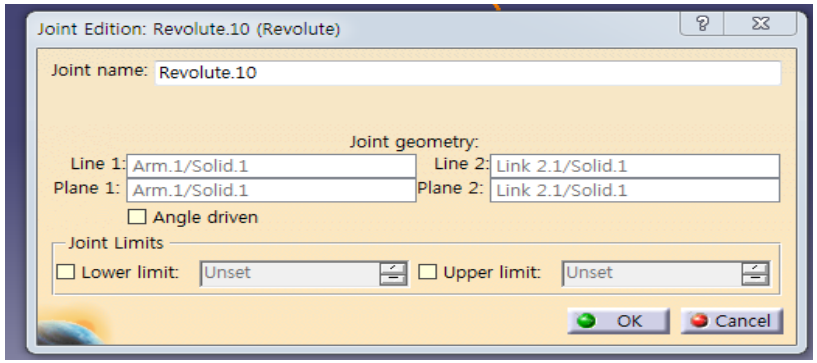



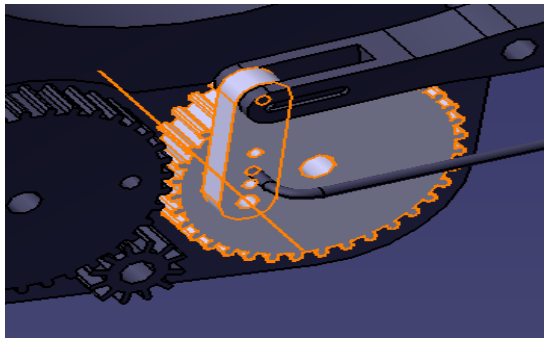


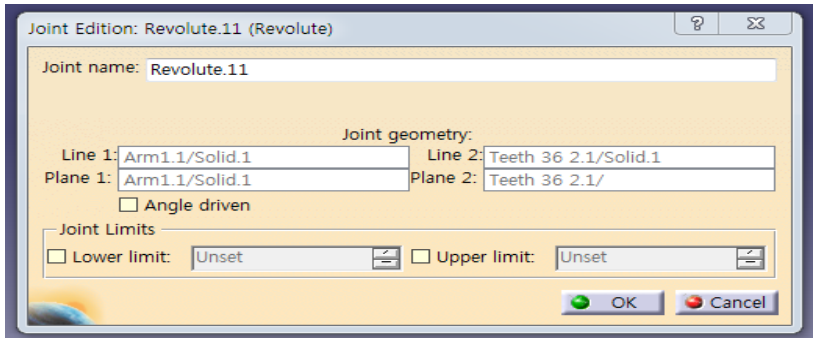

## Revolute Joint

# 날개 Joint 과정



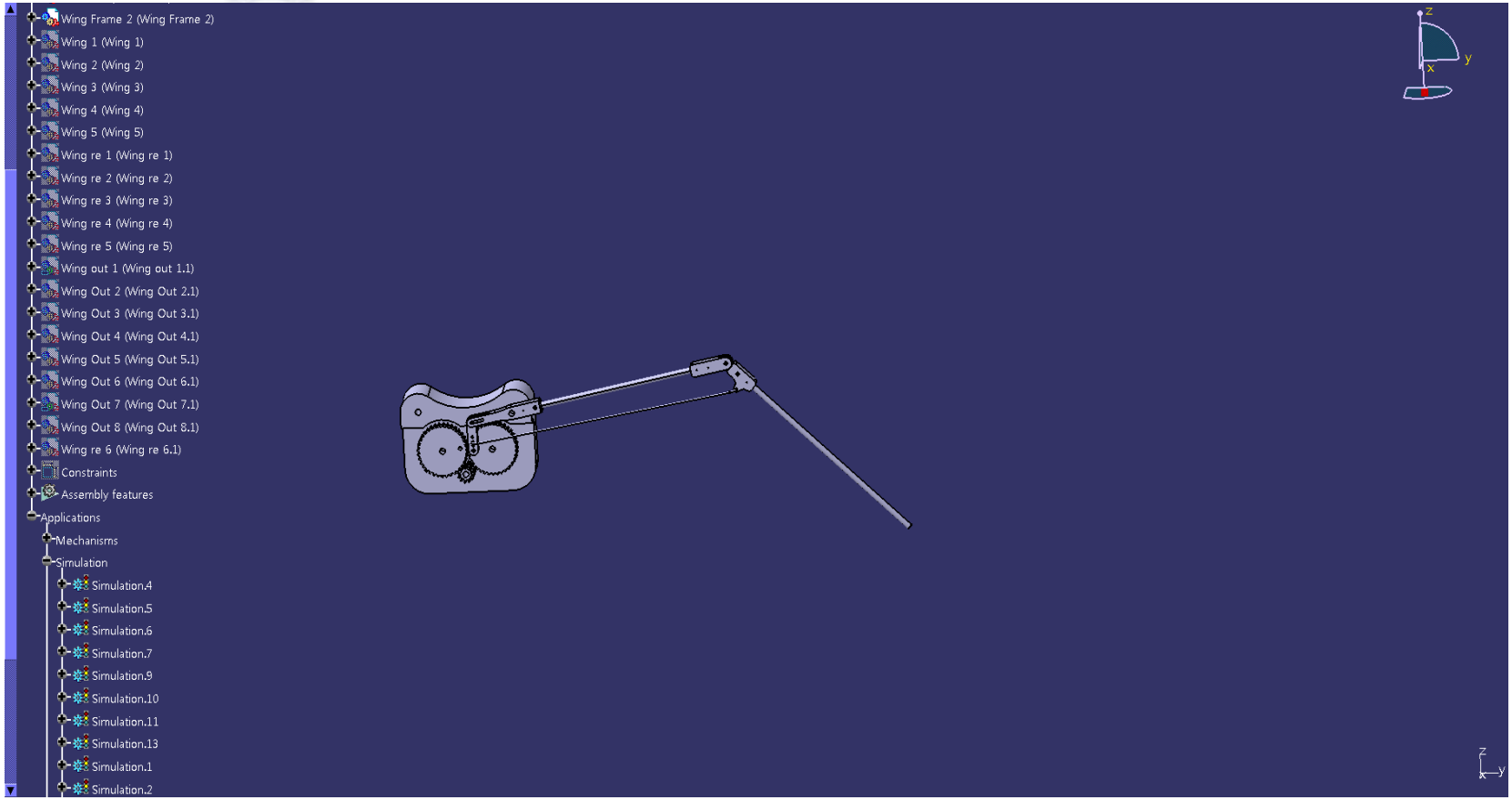




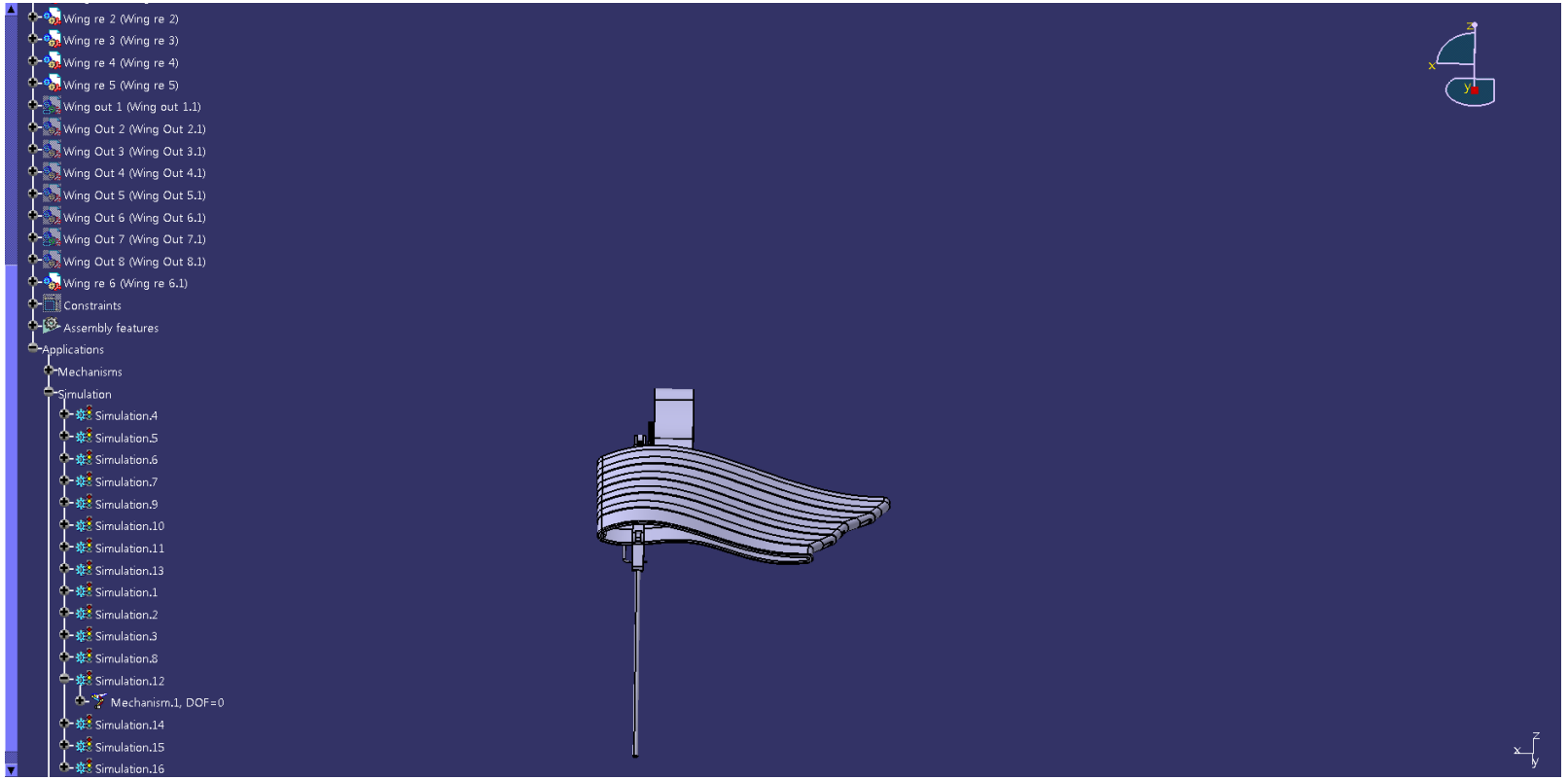

## Revolute Joint

# 날개 Simulation 과정




DOF = 3(L-1) -2J
L = 6, J = 7 (full joint)
-> DOF = 1

# 날개 Simulation 과정




DOF = 3(L-1) -2J
L = 6, J = 5 (full joint)
-> DOF = 5

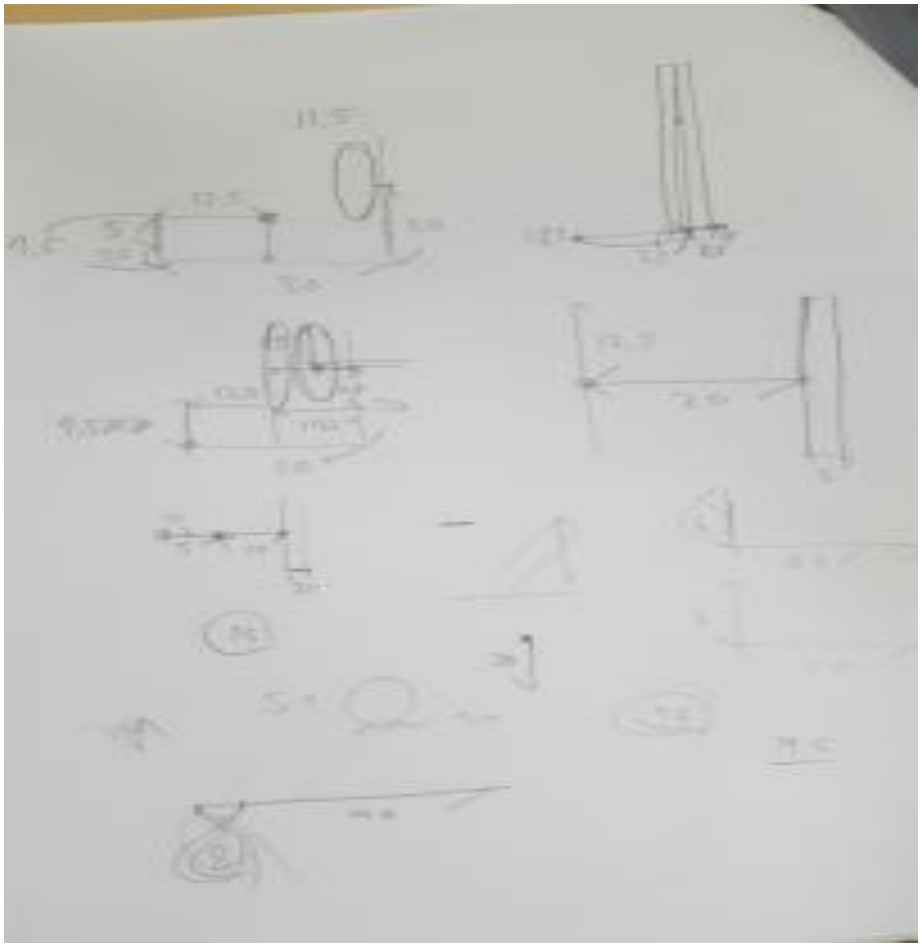
# 03 CONSIDERATION

3-1 프로젝트 진행 상 어려움

3-2 해결 과정

3-3 완성 후기

# 문제점



-치수 측정과 실제 대입 시 생기는 오류

-논리적인 운동을 구현해 내기 어려움

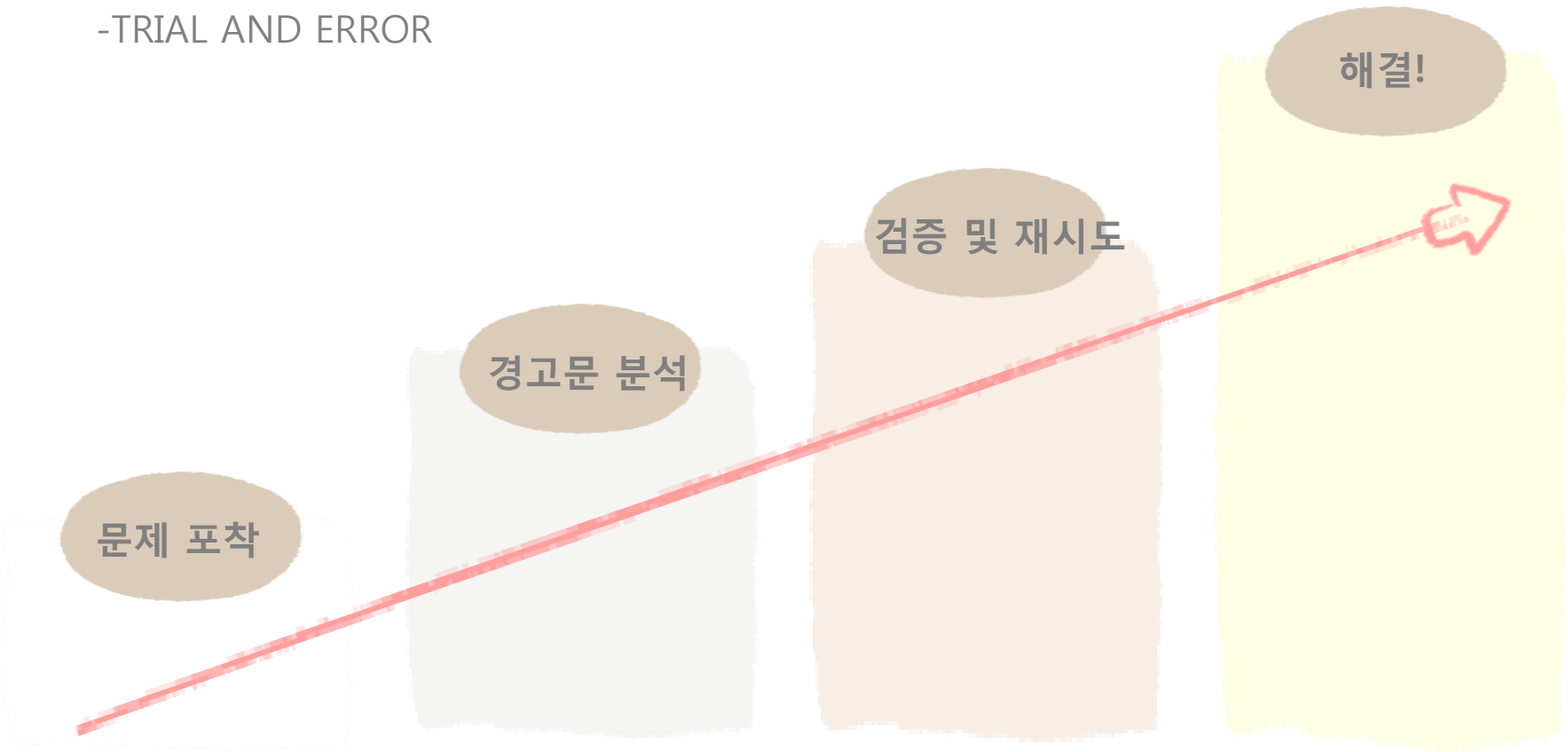
-구현한 운동이 실제 상황에서 맞물리는 오류

-REDUNDANCY COMMAND 취급 오류

# 해결 과정

-논리적 검증 및 기초 단계 재점검

-TRIAL AND ERROR



# 렌더링 사진

# 구동 영상

# 출처

https://www.youtube.com/watch?v=3SKiH8N8D6w

https://www.youtube.com/watch?v=N9b45bRSlG8

www.makermasters.com

www.the9billion.com

https://grabcad.com/library/flapping-wing-mechanism-1

# Q&A ???

Thank you for listening.
Tell us if you have any questions

# Thank you..!!!

Thank you for listening.
Tell us if you have any questions