부경대학교 ULab: 3DP 개발 개요 및 내용소개

지산학 네트워킹 데이

ULab 소개

연구분야

- · Operation Research
 - Simulation
- Heuristic(B&B, GA ···)
- · Modeling Methodology
- Production Management

주요 과제

- Robotized & Automated Manufacturing
- · Schduling in annealing line(steal industry)
 - - Simulation
 - Optimization

트레이닝 코스

- Unity study
- Paper study (Robotize & Scheduling)
- Modeling with Opt tools(Cplex, OR-Tools)







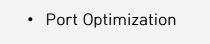


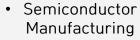












3DP: 전체과정

조선소 대형선박 공정 가상 시뮬레이션 ((())) ☆ Unity (() ()







STEP 1

선박의 부품, 조선소 환경 등 가상환경 구현







STEP 2

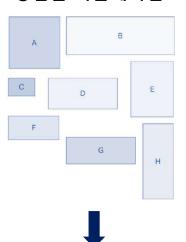
속도, 성능 향상을 위한 경량화 작업

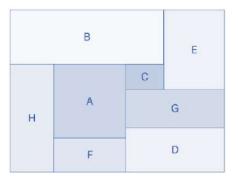




STEP 3

가상환경 상에서 방법론 시뮬레이션





3DP: 전체과정

• 조선소 대형선박 공정 가상 시뮬레이션 🍿 🗘 Unity 🔑 📂







가상환경 구현





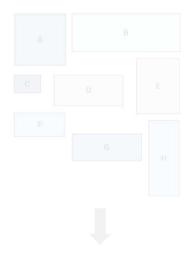
STEP 2

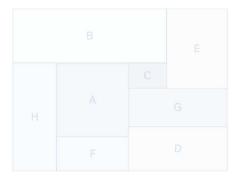
속도, 성능 향상을 위한 경량화 작업





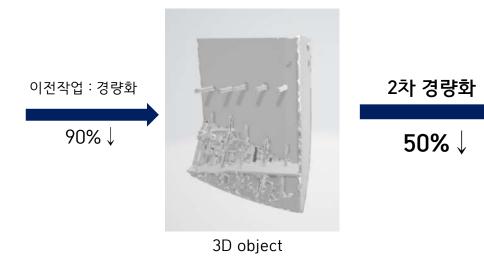
방법론 시뮬레이션

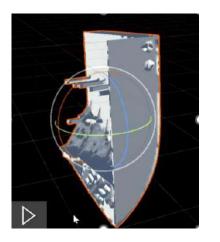




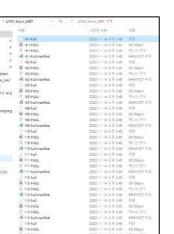
3DP: 세부 개발 내용: Assetbundle Module

Unity 2-1. 속도, 성능 향상을 위한 경량화 작업



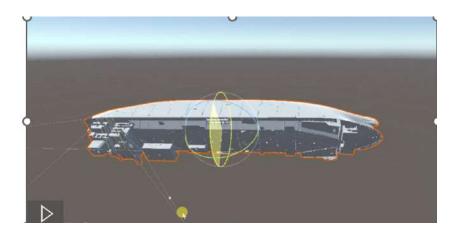


Assetbundle



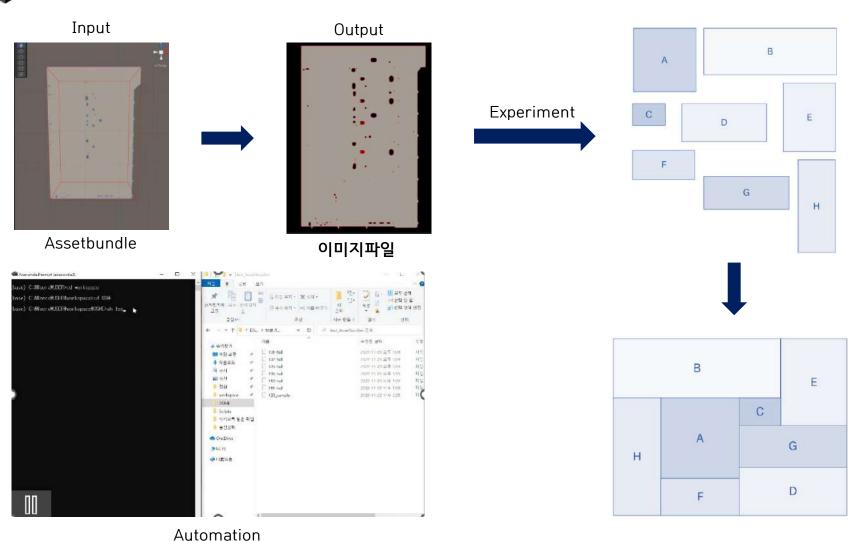
- 유효성 확인
- 일치성 확인
- 에러 여부 확인





3DP: 세부 개발 내용: Topview Module

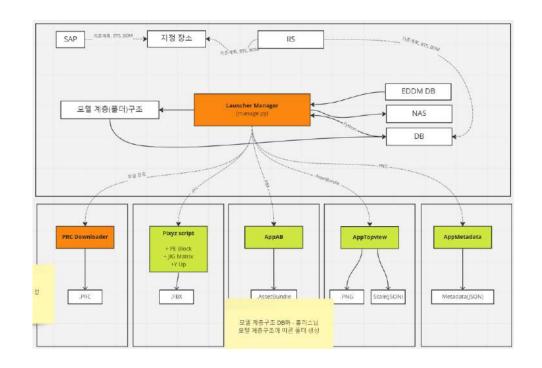
Unity 2-2. 방법론 실험을 위한 이미지 파일 추출

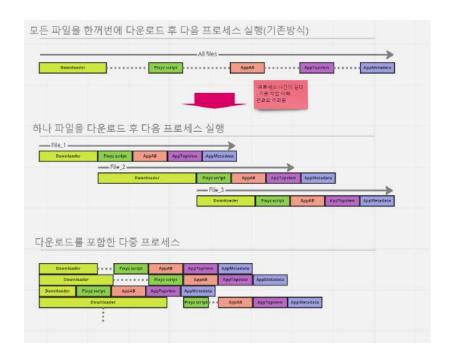


Methodology

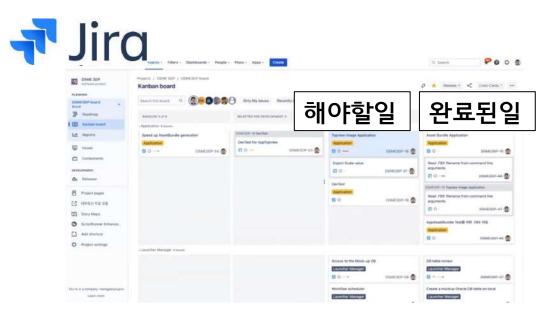
- 3d bin-packing
- Multiple knapsack
- RL

3DP : 협업 도구





3DP: 협업 도구

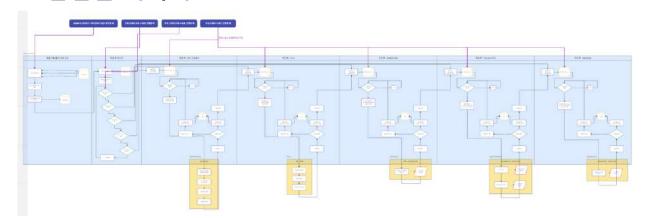


• 로드맵 확인





• 협업을 시각화

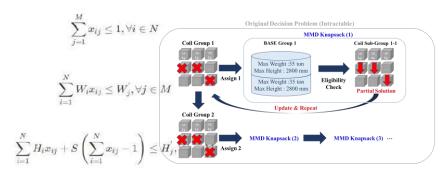


ULab

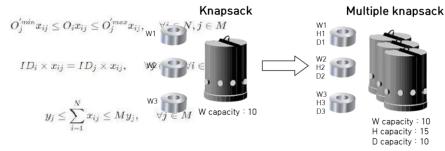
최적화 방법론

$$Maximize \ z = \sum_{i=1}^{N} \sum_{j=1}^{M} H_i x_{ij}$$

 $H_{j}^{'} imes threshold imes y_{j} \leq \sum_{i=1}^{N} H_{i}x_{ij}, \hspace{0.5cm} orall j \in M$

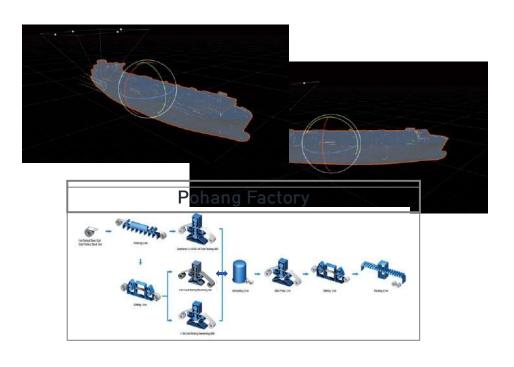








시뮬레이션 가상환경 구축



거대자본산업에서의 최적화 방법론 연구

Reference

https://m.post.naver.com/viewer/postView.naver?volumeNo=26406790&memberNo=39789685 https://medium.com/openrndr/packture-tool-using-bin-packing-as-a-design-strategy-6746250fb0d3

감사합니다