



Development of Steel scrap AI systems in Korea

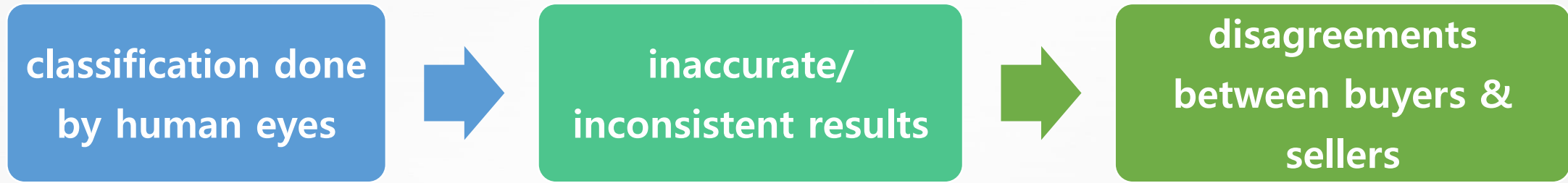


Ministry of Trade,
Industry and Energy

March 2024



- About 20% of Korea's steel scrap demand relies on imports
- Inefficiencies in how steel scrap was traded within the country
 - Prices often did not match the quality of the scrap

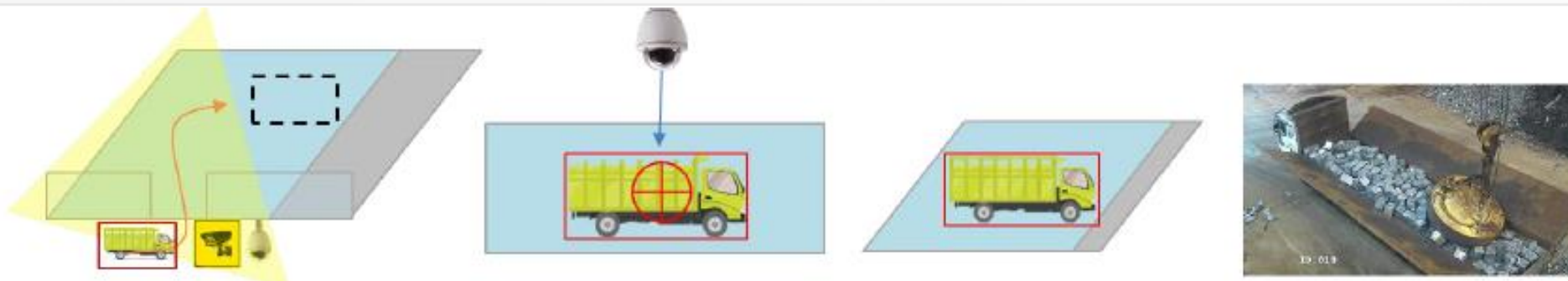


- Benefits of accumulating detailed data of steel scrap used for production

- ✓ **Project Name** : Research on Improving Steel Scrap Quality and Development of an Open Steel Scrap data Service Platform
- ✓ **Duration** : 2022 ~ 2025 (4 years)
- ✓ **Companies** : Hyundai Steel, Dongkuk Steel, BOGONET, etc.

II How the Technology Works

1. A truck enters and is identified



2. A grapple enters and is identified



3. An area of scrap is defined



4. Dangerous items are identified



5. The system starts analyzing...

원본 이미지



비율 비교



FOR REFERANCE ONLY



라벨링 이미지

추론 이미지

원본 이미지



비율 비교



FOR REFERENCE ONLY



라벨링 이미지



추론 이미지

ANSWER Live Vehicle **Company** Danger

① 업체별 위험물 목록

날짜 범위 | 시작일을 선택해 주세요 | 종료일을 선택해 주세요

업체 목록		작업 목록				
#	업체	위험물 비율	날짜/시간	차량	권표	위험물
1	현일산업(주)	120	2023. 2. 28. 오후 1:01	11라 1111	563	3
2	고려철재	110	2023. 4. 28. 오후 6:32	12학 2198	127	6
3	현일산업(주)	98	2023. 5. 1. 오전 9:44	12학 2198	609	10
4	세이자원	50				
5	신명물간	38				
6	동양산업	27				
7	동부자원	8				

FOR REFERANCE ONLY

번호	시간	위험물	경량	중량
1	13:01 - 13:31	2	19%	12%
3	13:01 - 13:31	4	19%	12%
4	13:01 - 13:31	5	19%	12%

ANSWER Live Vehicle Company Danger

인천85바9168
80톤제강공장

출입 정보

- 차량번호: 80톤제강공장
- 출입차: 402
- 전표번호: 0244
- 출고번호: C22107110296

차량 정보

- 업체명: 한일산업(주)
- 출하부상: 신아세차산업
- 차량번호: 인천85바9168
- 지역: 화성
- 운전자: 최병근

시간 정보

- 출생시간: 155542
- 시작시간: 2022. 10. 26. 오후 3:54
- 종료시간: 2022. 10. 26. 오후 4:05
- 작업시간: 10분

검수 결과

- 검수자: 정희수
- 총 그래프: 9
- 검수 등급: B1_중량B(B03)

중량 분석

- 중량: 12
- 경량: 19
- 상천: 10

중량 그래프

중량	경량	상천
12%	19%	10%

중량 상세

중량	경량	상천
12%	19%	10%

중량 상세

중량	경량	상천
12%	19%	10%

FOR REFERANCE ONLY



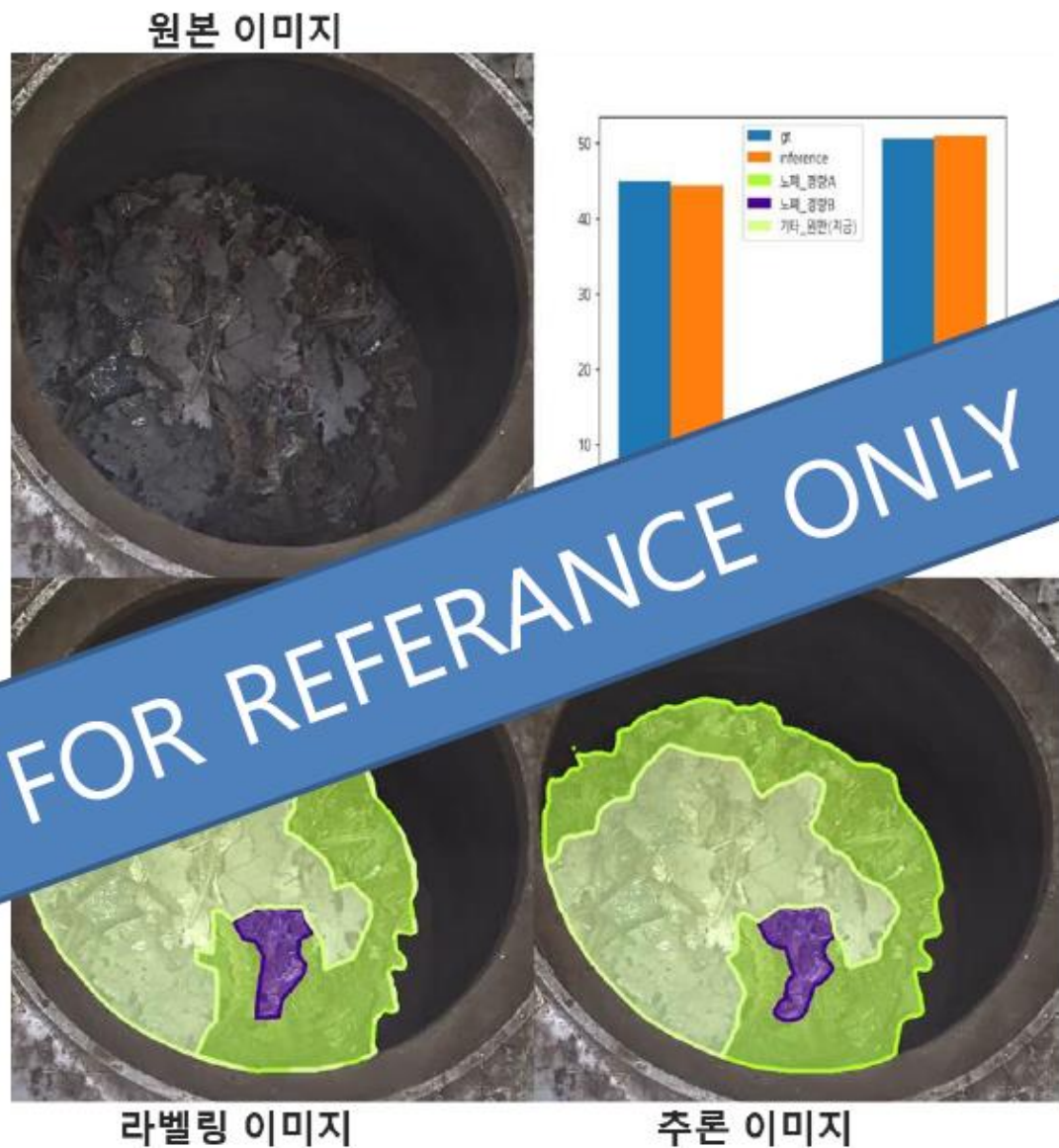
How the Technology Works

The system has reached about 96% accuracy on average.

Class	Level 1	A1				B1		B2		C1			D1		
	Level 2	A01	A02	A03	A04	B01	B02	B04	B05	C01	C02	C03	D01	D02	D07
Accuracy (%)		96.0	97.0	94.0	97.0	80.0	91.0	95.0	97.0	97.0	100.0	95.0	100.0	98.0	100.0
Class	Level 1	G2		G3			P3	P5	P1	P4	S1		Average		
	Level 2	G01	G02	G03	G04	G33	P03	P04	P05	P13	S02	S03			
Accuracy (%)		90.0	91.0	98.0	-	99.0	100.0	100.0	100.0	100.0	98.0	100.0	96.4%		

II How the Technology Works

The technology can also be applied when loading steel scrap into an EAF.



FOR REFERENCE ONLY

FOR REFERENCE ONLY

ANSWER CHARGING



FOR REFERENCE ONLY





- Continual **system refinement** to bolster accuracy
- Ongoing **demonstration tests** at participating companies' yards throughout this year
- **Adoption by major steelmakers and steel scrap suppliers by 2025**, with a view to practical implementation in transactions by 2026

- ✔ Ensuring the reliability of the system through **standardization, evaluation, and verification** procedures
- ✔ **Consensus-building** among suppliers and buyers
- ✔ Ensuring **equitable access to the system and equipment**, particularly for smaller suppliers, to uphold fairness and transparency in transactions

Thank you



Ministry of Trade,
Industry and Energy