Hansatic

KARATASI NYEUPE YA KIUFUNDI

Upangaji wa mzigo wa neuro-symboliki

Injini ya upakiaji na modeli nane za AI za mstari wa mbele kwenye mizigo halisi ya wateja.

Novemba 2026

hansatic.com/sw/neuro-symbolic-load-planning

Ukurasa mwenza, na kila mpango kwa 3D: hansatic.com/sw/neuro-symbolic-load-planning

Muhtasari

Tunaunganisha injini ya kupanga ya kuaminika na akili bandia ya kutengeneza. Kabla ya kujenga muunganiko, tulipima kila sehemu kivyake.

- **Taarifa:** kesi 20 halisi za mipango ya mizigo ya wateja, mbio 26 zilizopimwa. Zinajumuisha makontena ya baharini, malori za pazia, van kavu ya 53 ft (16.2 m), kontena ya hewa ya AKE na ujenzi wa pallet ulioshikamana.
- **Washiriki:** injini ya uzalishaji ya kupanga ya Hansatic na LLM nane kuu za kisasa. Kila muundo lazima itoe nafasi na mkao kwa kila kipengee katika jibu moja la JSON, bila zana.
- **Mhakiki:** mthibitishaji mmoja wa kuaminika hupima kila mshiriki kwa namna moja. Hukagua:
  - jiometri;
  - msaada wa msingi wa 95%;
  - mipaka ya kupanga juu na ya vitu rahisi kuvunjika;
  - bendera za mkao;
  - rundo nyembamba;
  - mzigo wa kubeba na mizigo ya ekseli;
  - ukanda wa CoG wa urefu.

Matokeo:

- **Injini** ni halali katika mbio 26 kati ya 26. Dhidi ya jibu bora halali la muundo katika kila mbio, iko mbele kwa 18 (13 wazi, 5 kwa karibu) na kufanana kwa 8. Haiko nyuma kwa hata moja.
- **Muundo imara zaidi,** GPT-5.5, ni halali katika mbio 25 kati ya 26, ikijumuisha manifesti zenye vipande hadi 253.
- **Nne kati ya miundo minane** ni halali katika chini ya theluthi moja ya mbio.
- **Mambo miundo hufanya vizuri.** Majibu bora ya miundo yalitumia mikakati miwili ya mpangilio ambazo injini haikukuwa nazo. Yote mawili sasa ni mikakati ya injini ya kuaminika.

Tunafikia hitimisho kuwa injini ni mpangaji bora zaidi leo, na kwamba ubunifu wa miundo unastahili kukamatwa. Usanifu wetu kwa hilo ni neuro-tamanifu:

- miundo hupendekeza mikakati;
- injini hujenga mipango yote;
- mthibitishaji hudumisha maboresho halali pekee.

Tunatoa kesi, mthibitishaji, maelekezo na msimbo wa alama.

1. Muundo wa alama za kulinganisha

1.1 Kesi

Kila kesi ni mzigo halisi wa mteja kutoka kwa programu ya Hansatic, ulionakiliwa 1:1: vipimo, uzito, idadi, bendera na gari. Nambari za vitu zimebadilishwa na majina ya mizigo yameondolewa.

Seti	Kesi	Mendesho	Magari	Vipande
Kawaida (H01-H12)	12	16	moja 20', mbili 40' kavu, nne 40' HC, moja 45' HC, nne 13.6 m (44.6 ft) curtainsider	14-83
Kubwa (BV1-BV6)	6	8	tatu 40' HC, moja 40' kavu, 13.6 m (44.6 ft) curtainsider moja, na 53 ft (16.2 m) dry van moja	103-253
Maalum (U01, P01)	2	2	AKE (LD3) yenye ukuta ulioelekea; godoro ya 1200 × 1000 mm (47 × 39 in)	50 na 40

Mendesho na malengo:

- **Malori** hupimwa mara mbili: kwa metre za kupakia (LDM) na kwa nafasi za godoro. Hii inatoa mendesho 16 kutoka kwa kesi 12 za kawaida na 8 kutoka kwa kesi 6 kubwa.
- **BV5 na BV6** hazitoshi kikamilifu. Kuweka vitu vingi zaidi ndilo lengo kuu hapo.
- **U01 na P01** kila moja ina kiwango bora kinachojulikana:
  - U01: 24 ya 50 vipande, kwa sababu ukuta ulioelekea hauruhusu zaidi;
  - P01: 40 ya 40 mifuko kwa 100% interlock.

Vizuizi katika kesi:

- vitu visivyoweza kupangwa juu na vya juu pekee (nyeti);
- vikomo vya uzito wa kupangwa kwa kila kifaa;
- bendera za upande huu juu na asizungushwe;
- vijiti virefu (BV1, hadi urefu wa kontena);
- kifaa kimoja kikubwa na kizito (H02);
- mizigo mchanganyiko ya godoro na katoni (BV3).

1.2 Mthibitishaji

Mthibitishaji (v2.3.0) hukagua kila mpango kwa namna moja. Mpango ni halali tu ikiwa ukaguzi wote mgumu umefanikiwa.

Ukaguzi	Kanuni
Vikomo	kila kifaa ndani ya nafasi ya mizigo, ikiwa ni pamoja na mteremko wa AKE
Kupishana	hakuna vitu viwili vinavyoshiriki kiasi

Ukaguzi	Kanuni
Msaada	angalau 95% ya msingi wa kila kifaa unakaa sakafuni au juu ya vitu vilivyo chini
Kupangwa juu	vitu visivyoweza kupangwa juu havibebi chochote; vitu vya juu pekee havibebi chochote na hukaa juu; vikomo vya uzito wa kupangwa kwa kila kifaa vinashikiliwa
Mwelekeo	bendera za upande huu juu na asizungushwe zimezingatiwa
Vifungo membamba	kikomo cha uwiano wa kimo kwa msingi kwenye mifungo ya kujitegemea
Mzigo	jumla ya uzito ndani ya kikomo cha gari
Ekseli (malori)	mizigo ya ekseli ya mbele na ya nyuma ndani ya vikomo, ikikokotolewa kutoka kwa viini vya mvuto vya vitu
CoG (makontena)	kiini cha mvuto cha urefu ndani ya bendi inayoruhusiwa
Vituo vingi	ya mwisho kuingia, ya kwanza kutoka kwa kituo, ambapo kesi ina vituo

Hatari ya kuanguka inakokotolewa na kuripotiwa, lakini haipimiwi.

1.3 Uorodheshaji

Inatumika kwa kila mendesho:

1. Mpango halali unashinda ule usio halali.
2. Kuweka vitu vingi zaidi kunashinda.
3. Lengo la mendesho linaamua:
    - mzigo mfupi (LDM);
    - au nafasi chache za godoro;
    - au, kwa P01, kiwango cha juu cha interlock, kisha kimo kidogo.
4. Usawa kwa nafasi za godoro unavunjwa na LDM.

Kihesabu kimoja kinahesabu nafasi za godoro kwa kila mshiriki: kihesabu cha uzalishaji cha Hansatic.

Pengo. Tunaita ushindi:

- **wazi** ikiwa ni angalau 2% kwa LDM, angalau nafasi moja ya godoro, au angalau kifaa kimoja kingine kilichowekwa;
- **mwembamba** vinginevyo.

Injini inafanya kazi ndani ya bajeti ya muda, kwa isso tofauti ya mendesho mmoja chini ya 2% inaweza kuwa tofauti kati ya mendesho (sehemu 6.2).

1.4 Washiriki

Modeli. Modeli kuu ya mstari wa mbele ya kila moja ya maabara nane:

- GPT-5.5 (OpenAI)
- Claude Opus 5.5 (Anthropic)
- Grok 4.7 (xAI)
- Gemini 4 Argon (Google)
- Kimi K3.1 Pro (Moonshot AI)
- DeepSeek V4 Pro (DeepSeek)
- Qwen3p8 (Alibaba)
- Magistral Medium (Mistral AI)

Mipangilio:

- **Mendesho:** mmoja kwa kila kesi.
- **Kikomo cha matokeo:** tokeni 64k, au kiwango cha juu cha mtoaji kilichopungua (Gemini: 32k).
- **Kushughulikia kwa batch:** API za batch za mtoaji inapopatikana.
- **Majibu yaliyokusanywa:** 2026-11-11.
- **Gharama jumla:** takriban $64.

Injini. Mpakiaji wa uzalishaji wa Hansatic, toleo la 2026-11-20 (commit 9f66537c). Mipangilio:

- usanidi wa uzalishaji: wafanyakazi 4 na bajeti ya muda ya uzalishaji, zimefungwa kwa kiini kimoja cha CPU;
- mendesho mmoja kwa kila kesi, hakuna kuchagua bora;
- inapakia kwa kanuni yake ya msaada ya 60%, na inahukumiwa kwa 95% kama kila modeli.

1.5 Maagizo

- Agizo moja kwa kila aina ya gari: kontena, lori, ULD na godoro.
- Kila agizo linaonyesha kanuni halisi ambazo mthibitishaji hutumia kwa aina hiyo, lengo, na muundo wa matokeo (kitambulisho cha kifaa, nafasi, mkao).
- Hakuna miundo iliyokwisha kutatuliwa inayotolewa kama mifano.

Mifano kamili yapo katika Kiambatisho A.

2. Matokeo

2.1 Kwa kila modeli, majaribio yote 26

Modeli	Halali	Kulingana na injini	Nyuma ya injini
GPT-5.5	25	4	22
Opus 5.5	20	6	20
Grok 4.7	20	4	22
Kimi K3.1 Pro	12	5	21
DeepSeek V4 Pro	7	3	23
Gemini 4 Argon	5	2	24
Qwen3p8	4	3	23
Magistral Medium	2	0	26

Hakuna modeli yoyote inayoshinda injini katika jaribio lolote.

Seti ya kawaida (majaribio 16).

Modeli	Halali	Kulingana	Nyuma
GPT-5.5	15	3	13
Opus 5.5	13	4	12
Grok 4.7	10	2	14
Kimi K3.1 Pro	8	3	13
DeepSeek V4 Pro	4	2	14
Gemini 4 Argon	4	1	15
Qwen3p8	2	1	15
Magistral Medium	1	0	16

Seti kubwa (majaribio 8). Hakuna modeli inayolingana na injini katika jaribio kubwa lolote.

Modeli	Halali
GPT-5.5	8
Grok 4.7	8
Opus 5.5	5

Modeli	Halali
Kimi K3.1 Pro	2
DeepSeek V4 Pro	1
Magistral Medium	1
Gemini 4 Argon	0
Qwen3p8	0

Seti maalum (majaribio 2).

Modeli	Halali	Inafikia kiwango bora
Opus 5.5	2	2
Grok 4.7	2	2
Kimi K3.1 Pro	2	2
Qwen3p8	2	2
GPT-5.5	2	1
DeepSeek V4 Pro	2	1
Gemini 4 Argon	1	1
Magistral Medium	0	0

2.2 Injini dhidi ya jibu bora halali la modeli

Seti	Wazi mbele	Karibu mbele	Kulingana	Nyuma
Kawaida (16)	7	3	6	0
Kubwa (8)	6	2	0	0
Maalum (2)	0	0	2	0
Yote (26)	**13**	**5**	**8**	**0**

Seti ya kawaida. Kila seli inaonyesha vitu vilivyowekwa, kisha urefu wa mzigo au nafasi za godoro.

Jaribio	Injini	Modeli bora halali	Ukingo
H01	26/27, 11.69 m (38.4 ft)	Opus 26, 11.74 m (38.5 ft)	karibu (0.4%)
H02	24/29, 5.78 m (19.0 ft)	GPT 18, 5.76 m (18.9 ft)	wazi (+6 vilivyowekwa)
H03	31/32, 10.51 m (34.5 ft)	hakuna halali	wazi
H04	39, 10.44 m (34.3 ft)	Opus 39, 10.44 m (34.3 ft)	kulingana

Jaribio	Injini	Modeli bora halali	Ukingo
H05	49, 12.40 m (40.7 ft)	Opus 49, 12.40 m (40.7 ft)	kulingana
H06	83, 10.65 m (35.0 ft)	Grok 83, 11.41 m (37.4 ft)	wazi (6.6%)
H07	45, 9.60 m (31.5 ft)	GPT 45, 9.60 m (31.5 ft)	kulingana
H08	52, 5.92 m (19.4 ft)	Kimi 52, 6.12 m (20.1 ft)	wazi (3.3%)
H09 LDM	29/30, 13.36 m (43.8 ft)	GPT 29, 13.56 m (44.5 ft)	karibu (1.5%)
H09 godoro	29/30, 29 nafasi	GPT 29, 29 nafasi	karibu (kigezo cha LDM)
H10 LDM	26, 12.20 m (40.0 ft)	DeepSeek, sawa	kulingana
H10 godoro	26, 31 nafasi	DeepSeek, sawa	kulingana
H11 LDM	23, 12.00 m (39.4 ft)	Opus 23, 12.20 m (40.0 ft)	karibu (1.6%)
H11 godoro	23, 30 nafasi	Kimi 23, 32 nafasi	wazi (nafasi 2)
H12 LDM	13/14, 11.00 m (36.1 ft)	Gemini 13, 11.00 m (36.1 ft)	kulingana
H12 godoro	13/14, 25 nafasi	Kimi 13, 28 nafasi	wazi (nafasi 3)

Seti kubwa.

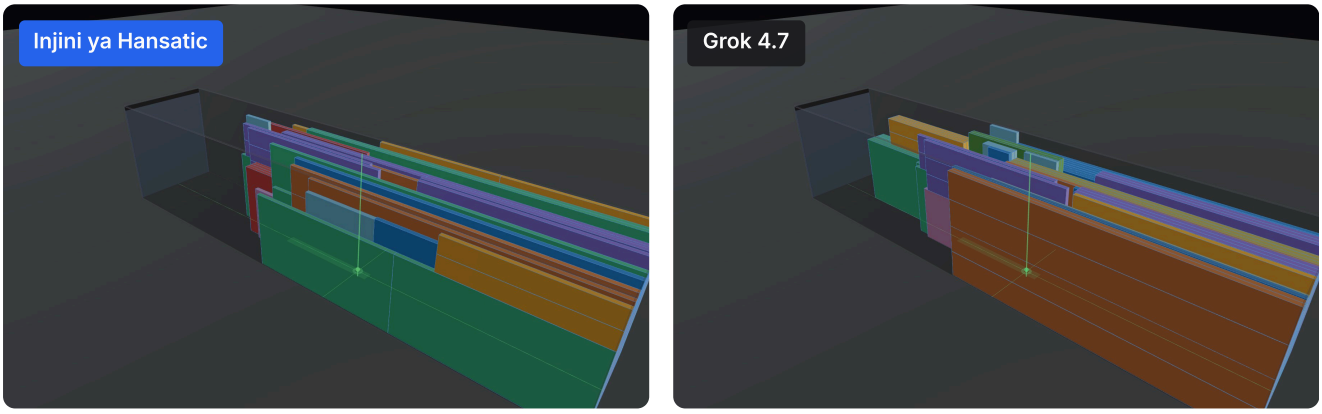
Jaribio	Injini	Modeli bora halali	Ukingo
BV1 (40' HC, 103 mabafu)	103, 9.17 m (30.1 ft)	Grok 103, 10.66 m (35.0 ft)	wazi (14.0%)
BV2 LDM (malori yenye mapazia, 153)	153, 11.52 m (37.8 ft)	Opus 153, 11.78 m (38.6 ft)	wazi (2.2%)
BV2 godoro	153, 29 nafasi	Opus 153, 29 nafasi	karibu (kigezo cha LDM)
BV3 LDM (van ya futi 53, 119)	119, 6.83 m (22.4 ft)	Opus 119, 6.99 m (22.9 ft)	wazi (2.2%)
BV3 godoro	119, 17 nafasi	Opus 119, 18 nafasi	wazi (nafasi 1)
BV4 (145, rahisi kuvunjika juu tu)	145, 8.57 m (28.1 ft)	Grok 145, 8.85 m (29.0 ft)	wazi (3.1%)
BV5 (136, wima tu)	127, 12.00 m (39.4 ft)	Opus 124, 11.77 m (38.6 ft)	wazi (+3 vilivyowekwa)
BV6 (253, 95% ya ujazo)	244, 11.98 m (39.3 ft)	GPT 238, 11.97 m (39.3 ft)	wazi (+6 vilivyowekwa)

Seti maalum.

Jaribio	Injini	Modeli
U01 (AKE)	24/50, kiwango bora	Opus, Grok, Kimi, Qwen na Gemini pia zinafikia 24; GPT na DeepSeek zinafikia 18
P01 (godoro)	40/40, 100% kufungamana, kiwango bora	kila jibu halali la modeli linafikia 40/40 kwa kiwango bora

2.3 Maana ya ukingo katika mzigo wa kweli

- **BV1:** fupi kwa 1.49 m (4.9 ft), karibu 12% ya urefu wa kontena la 40'.
- **H12 godoro:** nafasi 3 chache za godoro, karibu 9% ya sitaha ya malori yenye mapazia ya 13.6 m (44.6 ft).
- **BV6:** vipande 6 zaidi vilivyowekwa katika mzigo usioingia kikamilifu, kwa isso vipande 6 vichache vilivyobaki kwa gari lingine.



BV1: Injini ya Hansatic 9.17 m (30.1 ft), kushoto; jibu bora halali la modeli (Grok 4.7) 10.66 m (35.0 ft), kulia.

2.4 Gharama na muda

	Injini	Modeli
Muda kwa mpango	ndogo sana	haikulinganishwa: API za batch zinaweka maombi kwenye foleni
Gharama kwa mpango	ndogo sana	$0.10-0.80

3. Uchambuzi wa makosa

Katika majaribio 208 ya modeli (modeli 8 × 26), mipango 95 ni halali. Mingine 113 inashindwa kwa njia tatu tofauti.

Modeli	Halali	Hakuna jibu (kikomo cha pato)	Kosa la mtoa huduma	Mpango unavunja kanuni
GPT-5.5	25	1	0	0
Opus 5.5	20	6	0	0
Grok 4.7	20	0	4	2
Kimi K3.1 Pro	12	14	0	0
DeepSeek V4 Pro	7	19	0	0
Gemini 4 Argon	5	2	0	19
Qwen3p8	4	22	0	0
Magistral Medium	2	1	0	23
Jumla	**95**	**65**	**4**	**44**

3.1 Hakuna jibu: modeli inakosa nafasi ya kufikiria

Katika majaribio 65, modeli ilifikiria hadi ilipofikia kikomo cha pato na haikuandika mpango kamwe. Jibu moja zaidi (Magistral, H03) liliisha kawaida lakini halikuwa JSON halali; linahesabiwa hapa.

- Hii ndiyo kushindwa kwa kawaida zaidi, na inaathiri modeli sita kati ya nane.
- Kimi, DeepSeek na Qwen hupoteza majaribio yao mengi kwa njia hii. Mipango yao halali iko hasa kwenye kesi ndogo.
- Opus hupoteza majaribio 6 kwa njia hii, miongoni mwao BV1, BV4 na BV6, tatu ya orodha kubwa zaidi.

Kwa mpangaji wa uzalishaji, kutokuwepo kwa jibu ni kushindwa kama vile jibu lisilo halali: bandari bado inahitaji mpango.

3.2 Makosa ya mtoa huduma

Grok ilirudisha HTTP 403 katika majaribio 4, kwa sababu kikomo cha matumizi cha mtoa huduma kilifikiwa. Majaribio haya hayakutumwa tena na yanahesabiwa kama makosa.

3.3 Mipango inayovunja kanuni

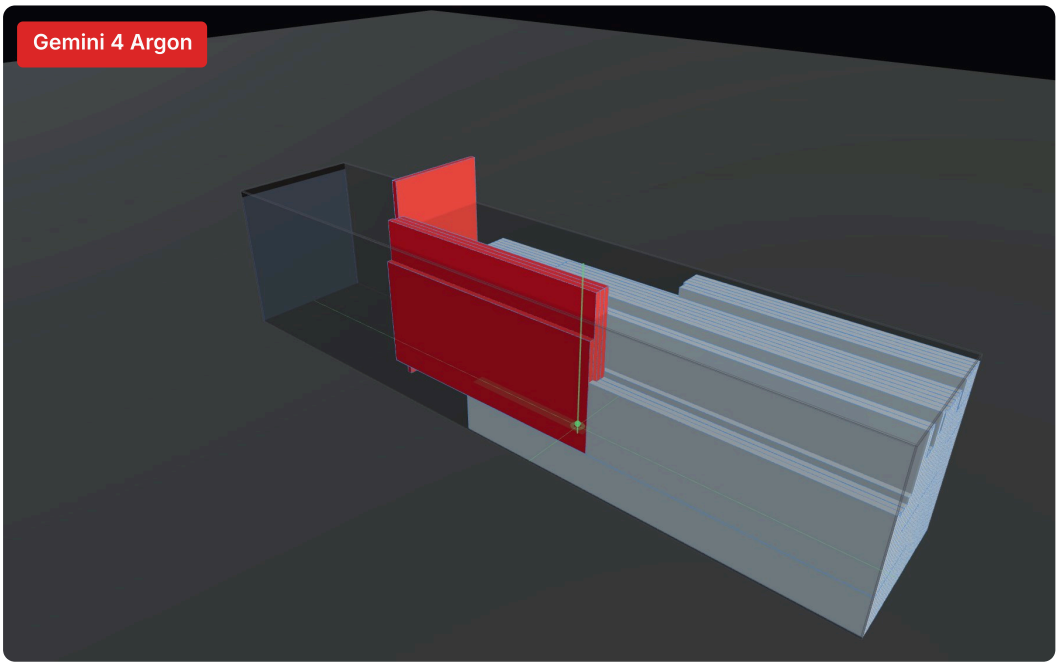
Majibu 44 ni mipango kamili inayovunja angalau kanuni moja ngumu. Karibu yote yanatoka kwa modeli mbili: Gemini (19) na Magistral (23). Grok ina 2.

Idadi ya mipango hii ya 44 yenye angalau uvunjaji mmoja wa kila aina:

Kanuni iliyovunjwa	Mipango
Kipengee nje ya nafasi ya mizigo	27
Vipengee vinavyogongana	27
Vipengee vinavyoelea (chini ya 95% msaada)	21
Vipimo vya kipengee visivyolingana na mkao wowote unaoruhusiwa	17
Mzigo juu ya vitu visivyo wezekani kupangwa juu au rahisi kuvunjika, au juu ya kikomo cha kupanga juu	10
Kupanga juu juu ya paa	9
Kiini cha mvuto nje ya ukanda	7
Mzigo mkubwa wa ekseli	4
Kipengee kisicho wezekani kuinamishwa kimeinamishwa	1
Nje ya mpaka wa AKE	1

Mipango miwili isiyo halali ya Grok kila moja inavunja kanuni moja: kipengee kilichosagwa katika jaribio moja, kiini cha mvuto kingine.

Mipango hii inaonekana ya kuaminika katika mtazamo wa 3D. Makosa mara nyingi ni vitu vichache, vinavyoelea au vinavyogongana kwa sentimeta. Ni ukaguzi kamili wa kijiografia pekee unaovipata.



BV1, Gemini 4 Argon: vitu 77 kati ya 103 vimewekwa. Vimeangaziwa: vitu vinavyoelea, vinavyogongana au kuwa nje ya nafasi ya mizigo.

3.4 Halali, lakini nyuma

- **Haijakamilika.** Kwenye BV5 na BV6, majibu bora ya modeli halali huweka vitu 3 na 6 vichache kuliko injini.
- **Ndefu.** Katika majaribio ambapo kila kipengee kimeingia, jibu bora la modeli halali ni refu kuliko la injini katika 13 ya majaribio 24 ya malori na makontena. Mapengo makubwa zaidi:
  - 1.49 m (4.9 ft) kwenye BV1;
  - 0.76 m (2.5 ft) kwenye H06.

3.5 Nini modeli hufanya vizuri

Majibu yenye nguvu zaidi hutumia mikakati ambayo timu yenye uzoefu hutumia:

- **Masanduku nzito dhidi ya ukuta wa mbele.**
- **Kutumia urefu juu ya vitu visivyo wezekani kupangwa juu.** Kwenye BV3, Opus huweka katoni upande wake kama sakafu ya 559 mm (22 in) urefu na husimamisha vifaa 19 visivyo wezekani kupangwa juu juu yake.

Injini haikuwa na mkakati wowote kati ya haya. Yote mawili sasa ni mikakati ya injini yenye uhakika. Hii ndiyo ubunifu ambao mzunguko wa neuro-kiashiria umeundwa kukamata (sehemu ya 5).

4. Mkono wa zana

Katika mkono wa pili, modeli inaweza kuita injini kupitia zana moja, `pack_cargo`, kisha kujibu kwa mpango wowote.

Modeli nyingi hunakili manifest ndani ya wito wa zana na kurudisha mpango wa injini bila kubadilika. Hitilafu hizi ni makosa ya kunakili:

- Magistral ilituma vitu 100 vyenye vipimo visivyo sahihi au bendera zisizo sahihi;
- Kimi ilifanya wito usio sahihi kwa H10;
- Qwen haikufaulu kwa majaribio 4.

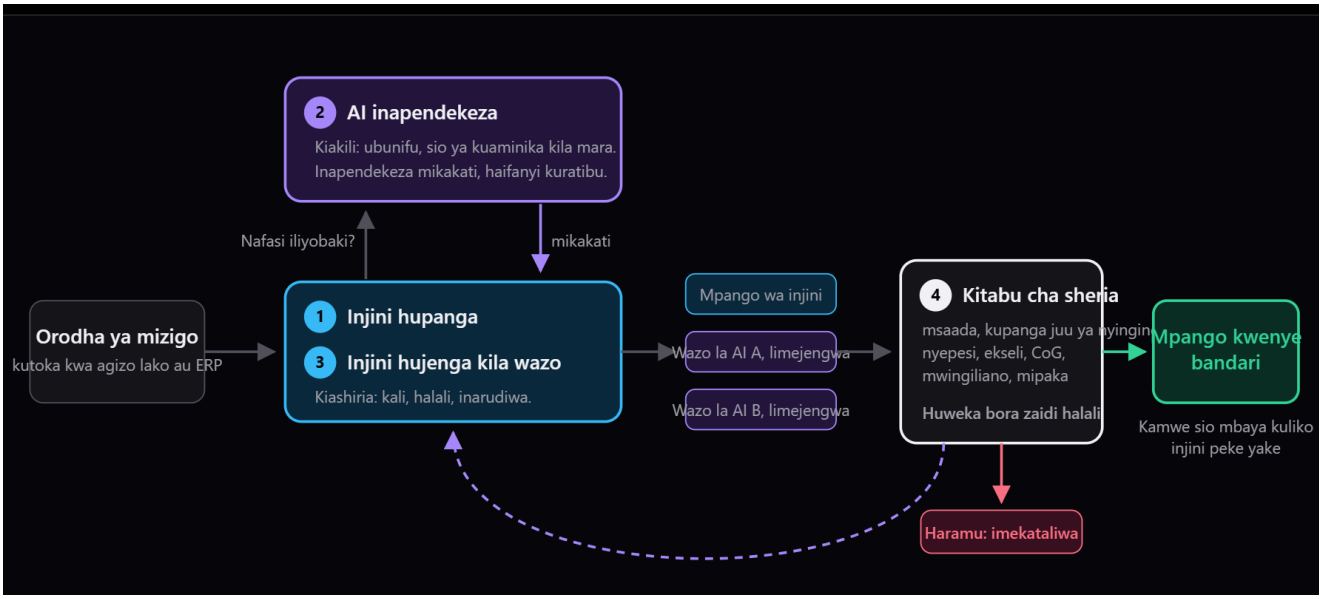
Maana yake: katika mfumo wowote uliounganishwa, injini lazima isome manifest moja kwa moja kutoka kwa mfumo chanzo, kamwe kupitia modeli.

5. Muundo wa neuro-symboliki

5.1 Aina mbili za akili

	Injini ya kupanga (symboliki)	AI ya kizazi (neural)
Sheria	inafuata sheria zote zilizowekwa, kila mara	huvunja sheria ilizopewa
Kurudiwa	mzigo uleule, mpango uleule	mzigo uleule unaweza kupata mpango tofauti
Ukaguzi	kila uwekaji una sababu	ngumu kukagua
Wigo	imepunguzwa kwa mikakati iliyo nayo	hupata mikakati mipya
Kiwango	inashughulikia vipande 253	miundo mingi haina jibu kwa orodha kubwa

5.2 Mzunguko



1. **Msingi.** Injini inapanga kutoka kwa orodha, inayosomwa moja kwa moja kutoka kwa mfumo chanzo.
2. **Kichochezi.** Muundo unaitwa tu wakati msingi unaacha nafasi: vitu visivyowekwa, kujazwa kidogo, au lengo la nafasi lisilotimizwa.
3. **Pendekezo.** Muundo unarudisha vigezo vya mkakati, kamwe si kuratibu:
   - maeneo;
   - mpangilio;
   - mapendeleo ya mwelekeo;
   - miundo ya sakafu na juu.
4. **Utekelezaji.** Injini hujenga mpango mmoja kwa kila pendekezo.

5. **Uamuzi.** Mthibitishaji huchagua mpango bora wa kisheria. Msingi daima ni mgombea.
6. **Usafishaji.** Pendekezo linaloshinda mara kwa mara linakuwa mkakati wa kudumu wa injini, kama ilivyokuwa kwa mikakati ya ukuta wa mbele na sakafu ya katoni.

5.3 Sifa kwa ujenzi

- **Kamwe si mbaya kuliko injini peke yake,** kwa sababu msingi daima ni mgombea.
- **Hakuna mpango usio wa kisheria unaofika bandarini,** kwa sababu mthibitishaji hukagua kila mgombea.
- **Hakuna hatari ya kunakili,** kwa sababu muundo hauwagusi kamwe orodha au kuratibu (sehemu 4).
- **Hakuna kushindwa kutokana na kikomo cha pato la muundo,** kwa sababu pendekezo ni vigezo vichache, si mpango wa vitu 253 (sehemu 3.1).
- **Gharama ya AI yenye kikomo,** kwa sababu muundo unaendesha tu kwa kichochezi.

Tunajenga mzunguko huu sasa. Utafanywa alama kama mshiriki wake mwenyewe katika toleo lijalo, kwa gharama na muda kwa kila mpango.

6. Wigo na mipaka

6.1 Wigo wa mthibitishaji

Halali inamaanisha halali kulingana na sheria zilizowekwa msimbo katika v2.3.0. Mthibitishaji haikagui mpangilio wa ujenzi zaidi ya multi-stop ya mwisho kuingia, kwanza kutoka.

6.2 Tofauti

Kila mshiriki hufanya mbio mara moja kwa kila kesi.

- **Injini** hufanya mbio ya mikakati ndani ya muda uliopangwa, kwa hivyo mzigo wa mashine unaweza kubadilisha mikakati ipi inamaliza kwanza. Kwenye H02 tulipima 5.63-5.79 m (18.5-19.0 ft) katika mbio.
- **Miundo** huchukuliwa sampuli mara moja.

Tofauti za mbio moja chini ya 2% huripotiwa kama nyembamba.

6.3 Kiwango cha miundo na kikomo cha pato

- Tuliendesha muundo mkuu wa mstari wa mbele wa kila maabara. Viwango vya bei ya juu (Anthropic Fable, OpenAI GPT-6 Astra) havikuendeshwa.
- Kikomo kikubwa cha pato linaweza kugeuza baadhi ya mbio bila jibu (sehemu 3.1) kuwa mipango.

6.4 Chanzo cha kesi

Kesi zote zinatoka kwa watumiaji wa jukwaa moja. Mchanganyiko wa mizigo ya wasafirishaji wengine unaweza kutofautiana.

7. Hatua zinazofuata

7.1 Kanuni za watendaji

Kanuni mbili za watendaji zinakuja, katika injini na katika mthibitishaji v3:

- **Nafasi ya juu:** angalau 50 mm (2.0 in) chini ya paa, au 100 mm (3.9 in) juu ya kipande kilichopangwa juu chenye uzito zaidi ya 25 kg (55 lb).
- **Nafasi ya upande** kwa kila safu ya forklift.

Tulifanya tathmini upya kwa kila mshindani kwa kanuni ya paa. Vitu vya sakafuni ambavyo haviwezi kuinamika na ni marefu kuliko paa minus 50 mm (2.0 in) vimeepushwa, kwa sababu kesi inavilazimisha.

- **Injini** inashikilia kanuni katika 9 ya 16 ya majaribio ya kawaida na 1 ya 8 ya majaribio makubwa.

- **Katika majaribio 6, jibu la modeli linafuata kanuni** kwa mpango karibu na ule wa injini. Haya ndiyo malengo ya kwanza ya injini:
  - H02 (GPT);
  - H06 (Grok, 11.41 m / 37.4 ft);
  - H12 LDM (Gemini, 11.00 m / 36.1 ft);
  - H12 godoro (Kimi, nafasi 28);
  - BV3 LDM (GPT, 9.14 m / 30.0 ft);
  - BV5 (Opus, 124 zilizowekwa).
- **Katika majaribio 8, hakuna mshindani anayefuata kanuni:** H01, H03, H08, BV1, majaribio yote mawili ya BV2, BV3 godoro, BV6.

7.2 Toleo lijalo

- Mthibitishaji v3, na nafasi ya juu, nafasi ya upande na ukaguzi wa mfuatano wa ujenzi, unaotumika kwa kila mshindani.
- Kesi mpya za wateja halisi.
- Miundo yenye uwezo mkubwa zaidi ya kila maabara, ikiwa ni pamoja na viwango vya juu, na majaribio kadhaa kwa kila modeli na tofauti zimeripotiwa.
- Mzunguko wa neuro-simboliki kama mshindani.

8. Utoaji

Imechapishwa:

- kila kesi kwa ukamilifu;
- mthibitishaji;
- maelekezo;
- msimbo wa alama na mpangilio;
- kwa kila utekelezaji: ombi lililotumwa, jibu la mtoa huduma lisilobadilishwa na mpango uliochambuliwa.

Kionyeshi: kila mpango kutoka kwa kila mshiriki, kwa 3D karibu na maelekezo yake na jibu ghafi: hansatic.com/sw/neuro-symbolic-load-planning.

Imefungwa:

- kaunta ya nafasi za godoro (kaunta ya uzalishaji ya Hansatic, iliyotumika kwa namna ileile kwa kila mshiriki);
- injini;
- vitambulisho vya mipango ya chanzo.

Kiambatanisho A. Violezo vya prompt

Prompt moja ya mfumo kwa kila aina ya gari, kama ilivyotumwa. Ujumbe wa mtumiaji unatoa lengo, kisha kesi kama JSON; orodha ya vitu imefupishwa hapa. Prompt zinaonyeshwa kwa Kiingereza, lugha ambazo mifano ilipokea.

Kontena la baharini (BV1, 40' High Cube)

Maelekezo ya mfumo

```
You are an expert load planner. You will be given a sea container and a cargo manifest. Produce a complete,
physically legal loading plan.

Coordinates are millimetres. The origin is the front-left floor corner of the container.
x runs along the length from the front wall (x = 0) to the doors (x = interior length).
y runs across the width from the left wall. z runs up from the floor.
All contact and overlap tests allow 1 mm of tolerance.

Hard rules (a layout that breaks any of them is illegal):
1. Every placed item lies fully inside the cargo space: x ⩾ 0, y ⩾ 0, z ⩾ 0, x + dx ⩽ length, y + dy ⩽
width, z + dz ⩽ height.
2. No two items overlap in 3D.
3. dx, dy, dz are the item's extents along x, y, z after you orient it, and must be a permutation of its length,
width and height. Each item id appears at most once.
4. If tiltable is false the item stays upright: dz must equal its height_mm (it may only turn about the vertical
axis).
5. Support: an item with z > 0 must rest with at least 95% of its base area on the tops of items whose top is
exactly at its z.
6. Nothing may rest on an item with stackable = false, nor on a fragile item that has no max_stack_kg above 0.
7. If an item has max_stack_kg, the total weight of everything at or above its top that overlaps its footprint
(at any height) must not exceed it.
8. Total weight of placed items must not exceed max_payload_kg.
9. Balance. Skipped for a light load: total manifest weight below 15% of max_payload_kg, total manifest volume
below 25% of the cargo space, and no item of 500 kg or more (all three). Otherwise the centre of gravity of
placed cargo plus tare_kg (tare acts at the middle of the floor) must satisfy:
   a. across the width: between 40% and 60% of the width from the left wall;
   b. along the length: between 35% and 65% of the length.
10. Slender piles: an item standing on another item's top, together with the comparable items directly below it,
may be at most 5 times as tall as its narrowest braced width. An item's braced width is the narrower side of the
block it stands in: the items at the same z that touch it side to side (gap at most 10 mm), each at least half as
tall as its neighbour, chained; walls do not count, and a lone item's braced width is its own narrower side. The
pile's narrowest braced width is the smallest over its items. The pile ends at the floor or at an item whose
narrower side is more than 1.5 times the top item's narrower side; a pile that reaches the floor, and a single
item on such a wider base, are not limited.

Loading practice, on the items standing on the floor (reported as a separate verdict, not part of legality):
- They form at most two blocks: a gap longer than 300 mm along x between them starts a new block.
- Items at least 85% of the width wide that share a footprint line up at the same y.

Also reported, never scored: floor load per item against max_floor_load_kg_m2, how far the floor block stands
from the nearest end wall (more than 150 mm), more than 3 gaps over 60 mm across the width in one cross-section,
items that could tip over in transport.

Place as many items as you legally can. Any item you cannot place goes in "unplaced".

Answer with one JSON object and nothing else after it, in this exact shape:
{"placements":[{"id":"I01","x":0,"y":0,"z":0,"dx":1200,"dy":800,"dz":1000}],"unplaced":["I07"]}
```

Ujumbe wa mtumiaji (orodha ya vitu imefupishwa)

```
Objective: Minimize loading meters: the occupied length, from the frontmost to the rearmost face of any cargo
along x. Fewer meters is better.
```

```
{
 "vehicle": {
  "code": "40HC",
  "type": "container",
  "interior_mm": {
   "length": 12032,
   "width": 2352,
   "height": 2698
  },
  "max_payload_kg": 26580,
  "tare_kg": 3900,
  "max_floor_load_kg_m2": 5400
 },
 "objective": "ldm",
 "items": [
  {
   "id": "I001",
   "length_mm": 6344,
   "width_mm": 90,
   "height_mm": 638,
   "weight_kg": 31.34,
   "stackable": true,
   "max_stack_kg": 1000,
   "fragile": false,
   "tiltable": true
  },
  {
   "id": "I002",
   "length_mm": 2706,
   "width_mm": 90,
   "height_mm": 354,
   "weight_kg": 12.72,
   "stackable": true,
   "max_stack_kg": 1000,
   "fragile": false,
   "tiltable": true
  },
  "... 101 more items"
 ]
}
```


Lori (H09, 13.6 m (44.6 ft) la pazia)

Maelekezo ya mfumo

```
You are an expert load planner. You will be given a truck and a cargo manifest. Produce a complete, physically
legal loading plan.

Coordinates are millimetres. The origin is the front-left floor corner of the cargo space.
x runs along the length from the front wall (x = 0) to the doors (x = interior length).
y runs across the width from the left wall. z runs up from the floor.
All contact and overlap tests allow 1 mm of tolerance.

Hard rules (a layout that breaks any of them is illegal):
1. Every placed item lies fully inside the cargo space: x ⩾ 0, y ⩾ 0, z ⩾ 0, x + dx ⩽ length, y + dy ⩽
width, z + dz ⩽ height.
2. No two items overlap in 3D.
3. dx, dy, dz are the item's extents along x, y, z after you orient it, and must be a permutation of its length,
width and height. Each item id appears at most once.
4. If tiltable is false the item stays upright: dz must equal its height_mm (it may only turn about the vertical
axis).
5. Support: an item with z > 0 must rest with at least 95% of its base area on the tops of items whose top is
exactly at its z.
6. Nothing may rest on an item with stackable = false, nor on a fragile item that has no max_stack_kg above 0.
7. If an item has max_stack_kg, the total weight of everything at or above its top that overlaps its footprint
(at any height) must not exceed it.
8. Total weight of placed items must not exceed max_payload_kg.
9. Balance. Skipped for a light load: total manifest weight below 15% of max_payload_kg, total manifest volume
below 25% of the cargo space, and no item of 500 kg or more (all three). Otherwise the centre of gravity of
placed cargo plus tare_kg (tare acts at the middle of the floor) must satisfy:
```

```
   a. across the width: between 40% and 60% of the width from the left wall;
   b. the total weight (cargo + tare) splits between kingpin and bogie like a beam on two supports at
kingpin_from_front_mm and bogie_from_front_mm; neither may exceed its max (not checked when the total is within
both limits).
10. Slender piles: an item standing on another item's top, together with the comparable items directly below it,
may be at most 5 times as tall as its narrowest braced width. An item's braced width is the narrower side of the
block it stands in: the items at the same z that touch it side to side (gap at most 10 mm), each at least half as
tall as its neighbour, chained; walls do not count, and a lone item's braced width is its own narrower side. The
pile's narrowest braced width is the smallest over its items. The pile ends at the floor or at an item whose
narrower side is more than 1.5 times the top item's narrower side; a pile that reaches the floor, and a single
item on such a wider base, are not limited.

Loading practice, on the items standing on the floor (reported as a separate verdict, not part of legality):
- They form one block: a gap longer than 300 mm along x between them starts a new block.
- Items at least 85% of the width wide that share a footprint line up at the same y.

Also reported, never scored: floor load per item against max_floor_load_kg_m2, how far the floor block stands
from the nearest end wall (more than 150 mm), more than 3 gaps over 60 mm across the width in one cross-section,
items that could tip over in transport.

Place as many items as you legally can. Any item you cannot place goes in "unplaced".

Answer with one JSON object and nothing else after it, in this exact shape:
{"placements":[{"id":"I01","x":0,"y":0,"z":0,"dx":1200,"dy":800,"dz":1000}],"unplaced":["I07"]}
```

Ujumbe wa mtumiaji (orodha ya vitu imefupishwa)

```
Objective: Minimize loading meters: the occupied length, from the frontmost to the rearmost face of any cargo
along x. Fewer meters is better.

{
 "vehicle": {
  "code": "CURTAINSIDER_136",
  "type": "truck",
  "interior_mm": {
   "length": 13620,
   "width": 2480,
   "height": 2700
  },
  "max_payload_kg": 24000,
  "tare_kg": 7200,
  "max_floor_load_kg_m2": 5000,
  "kingpin_from_front_mm": 840,
  "max_kingpin_kg": 12000,
  "bogie_from_front_mm": 12200,
  "max_bogie_kg": 21000
 },
 "objective": "ldm",
 "items": [
  {
   "id": "I01",
   "length_mm": 1000,
   "width_mm": 600,
   "height_mm": 800,
   "weight_kg": 100,
   "stackable": true,
   "max_stack_kg": 1000,
   "fragile": true,
   "tiltable": false
  },
  {
   "id": "I02",
   "length_mm": 3800,
   "width_mm": 1300,
   "height_mm": 1600,
   "weight_kg": 1000,
   "stackable": true,
   "max_stack_kg": 1000,
   "fragile": false,
   "tiltable": false
  },
  "... 28 more items"
```

```
 ]
}
```

Kontena la anga (U01, AKE yenye ukuta ulioinama)

Maelekezo ya mfumo

```
You are an expert load planner. You will be given an air container (ULD) and a cargo manifest. Produce a
complete, physically legal loading plan.

Coordinates are millimetres. The origin is the front-left floor corner of the container.
x runs along the length from the front wall (x = 0) to the doors (x = interior length).
y runs across the width from the left wall. z runs up from the floor.
All contact and overlap tests allow 1 mm of tolerance.

Hard rules (a layout that breaks any of them is illegal):
1. Every placed item lies fully inside the cargo space: x ⩾ 0, y ⩾ 0, z ⩾ 0, x + dx ⩽ length, y + dy ⩽
width, z + dz ⩽ height.
   Sloped sides: a sloped side {side, overhang_mm, height_mm} rises from the edge of the flat floor, overhang_mm
in from that wall, to height_mm up at the wall ("y+" is the wall at y = width, "y-" the wall at y = 0). An item
whose bottom is at z may come no closer to that wall than overhang_mm x (1 - z / height_mm); above height_mm the
full width is free.
2. No two items overlap in 3D.
3. dx, dy, dz are the item's extents along x, y, z after you orient it, and must be a permutation of its length,
width and height. Each item id appears at most once.
4. If tiltable is false the item stays upright: dz must equal its height_mm (it may only turn about the vertical
axis).
5. Support: an item with z > 0 must rest with at least 95% of its base area on the tops of items whose top is
exactly at its z.
   Exception for sloped sides: an item may instead lean on the slope with its outer bottom edge, nothing under
it, at z equal to the slope's height under that edge (height_mm x reach / overhang_mm, where reach is how far the
item extends past the edge of the flat floor; within 1.5 mm), provided that z is at most 15% of dy and at least
60% of dy, and the item's centre, lie over the flat floor.
6. Nothing may rest on an item with stackable = false, nor on a fragile item that has no max_stack_kg above 0.
7. If an item has max_stack_kg, the total weight of everything at or above its top that overlaps its footprint
(at any height) must not exceed it.
8. Total weight of placed items must not exceed max_payload_kg.
9. Balance. Skipped for a light load: total manifest weight below 15% of max_payload_kg, total manifest volume
below 25% of the cargo space, and no item of 500 kg or more (all three). Otherwise the centre of gravity of
placed cargo plus tare_kg (tare acts at the middle of the floor) must satisfy:
   a. across the width: between 40% and 60% of the width from the left wall;
   b. along the length: between 35% and 65% of the length.
10. Slender piles: an item standing on another item's top, together with the comparable items directly below it,
may be at most 5 times as tall as its narrowest braced width. An item's braced width is the narrower side of the
block it stands in: the items at the same z that touch it side to side (gap at most 10 mm), each at least half as
tall as its neighbour, chained; walls do not count, and a lone item's braced width is its own narrower side. The
pile's narrowest braced width is the smallest over its items. The pile ends at the floor or at an item whose
narrower side is more than 1.5 times the top item's narrower side; a pile that reaches the floor, and a single
item on such a wider base, are not limited.

Loading practice, on the items standing on the floor (reported as a separate verdict, not part of legality):
- They form at most two blocks: a gap longer than 300 mm along x between them starts a new block.
- Items at least 85% of the width wide that share a footprint line up at the same y.

Also reported, never scored: floor load per item against max_floor_load_kg_m2, how far the floor block stands
from the nearest end wall (more than 150 mm), more than 3 gaps over 60 mm across the width in one cross-section,
items that could tip over in transport.

Place as many items as you legally can. Any item you cannot place goes in "unplaced".

Answer with one JSON object and nothing else after it, in this exact shape:
{"placements":[{"id":"I01","x":0,"y":0,"z":0,"dx":1200,"dy":800,"dz":1000}],"unplaced":["I07"]}
```

Ujumbe wa mtumiaji (orodha ya vitu imefupishwa)

```
Objective: Place as many items as you legally can. Only the number of legally placed items is ranked.

{
```

```
 "vehicle": {
  "code": "AKE",
  "type": "uld",
  "interior_mm": {
   "length": 1500,
   "width": 1905,
   "height": 1550
  },
  "max_payload_kg": 1506,
  "tare_kg": 82,
  "max_floor_load_kg_m2": 976,
  "sloped_sides": [
   {
    "side": "y+",
    "overhang_mm": 445,
    "height_mm": 610
   }
  ]
 },
 "objective": "count",
 "items": [
  {
   "id": "I01",
   "length_mm": 500,
   "width_mm": 500,
   "height_mm": 500,
   "weight_kg": 1,
   "stackable": true,
   "max_stack_kg": 1000,
   "fragile": false,
   "tiltable": true
  },
  {
   "id": "I02",
   "length_mm": 500,
   "width_mm": 500,
   "height_mm": 500,
   "weight_kg": 1,
   "stackable": true,
   "max_stack_kg": 1000,
   "fragile": false,
   "tiltable": true
  },
  "... 48 more items"
 ]
}
```


Godoro (P01, 1200 × 1000 mm (47 × 39 in))

Maelekezo ya mfumo

```
You are an expert load planner. You will be given a pallet and a cargo manifest. Produce a complete, physically
legal loading plan.

Coordinates are millimetres. The origin is one corner of the pallet deck, on its top surface.
x runs along the deck length, y across the deck width, z up from the top of the deck.
All contact and overlap tests allow 1 mm of tolerance.

Hard rules (a layout that breaks any of them is illegal):
1. Every placed item stays on the deck: cargo may hang past each deck edge by at most 25 mm, so -25 ⩽ x, x + dx
⩽ length + 25, -25 ⩽ y, y + dy ⩽ width + 25. And z ⩾ 0, z + dz ⩽ max_cargo_height_mm.
2. No two items overlap in 3D.
3. dx, dy, dz are the item's extents along x, y, z after you orient it, and must be a permutation of its length,
width and height. Each item id appears at most once.
4. If tiltable is false the item stays upright: dz must equal its height_mm (it may only turn about the vertical
axis).
5. Support: an item with z > 0 must rest with at least 95% of its base area on the tops of items whose top is
exactly at its z.
6. Nothing may rest on an item with stackable = false, nor on a fragile item that has no max_stack_kg above 0.
7. If an item has max_stack_kg, the total weight of everything at or above its top that overlaps its footprint
```

```
(at any height) must not exceed it.
8. Total weight of placed items must not exceed max_payload_kg.
9. Balance. Skipped for a light load: total manifest weight below 15% of max_payload_kg, total manifest volume
below 25% of deck length x deck width x max_cargo_height_mm, and no item of 500 kg or more (all three). Otherwise
the centre of gravity of placed cargo plus tare_kg (tare acts at the middle of the deck) must satisfy:
   a. across the width: between 40% and 60% of the deck width;
   b. along the length: between 35% and 65% of the deck length.
10. Slender piles: an item standing on another item's top, together with the comparable items directly below it,
may be at most 5 times as tall as its narrowest braced width. An item's braced width is the narrower side of the
block it stands in: the items at the same z that touch it side to side (gap at most 10 mm), each at least half as
tall as its neighbour, chained; nothing outside the load counts, and a lone item's braced width is its own
narrower side. The pile's narrowest braced width is the smallest over its items. The pile ends at the deck or at
an item whose narrower side is more than 1.5 times the top item's narrower side; a pile that reaches the deck,
and a single item on such a wider base, are not limited.

Loading practice, on the bottom layer (items at z = 0) (reported as a separate verdict, not part of legality):
- They form one block: a gap longer than 300 mm along x between them starts a new block.
- Items at least 85% of the deck width wide that share a footprint line up at the same y.

Also reported, never scored: how far the bottom layer stands from the nearer deck end (more than 150 mm), more
than 3 gaps over 60 mm across the width in one cross-section, items that could tip over in transport.

Place as many items as you legally can. Any item you cannot place goes in "unplaced".

Answer with one JSON object and nothing else after it, in this exact shape:
{"placements":[{"id":"I01","x":0,"y":0,"z":0,"dx":1200,"dy":800,"dz":1000}],"unplaced":["I07"]}
```

Ujumbe wa mtumiaji (orodha ya vitu imefupishwa)

```
Objective: Build a stable interlocked pallet. After the number of placed items, the interlock share is ranked:
the share of items above the bottom layer that each rest on at least two different items directly below
(overlapping each by more than 10 mm in both x and y). Higher is better; a column stack scores 0 %. Ties are
broken by the lower build height.

{
 "vehicle": {
  "code": "IND",
  "type": "pallet",
  "deck_mm": {
   "length": 1200,
   "width": 1000
  },
  "max_cargo_height_mm": 1250,
  "max_payload_kg": 1500,
  "tare_kg": 30,
  "preferred_pattern": "interlocked"
 },
 "objective": "interlock",
 "items": [
  {
   "id": "I01",
   "length_mm": 600,
   "width_mm": 400,
   "height_mm": 120,
   "weight_kg": 25,
   "stackable": true,
   "max_stack_kg": 1000,
   "fragile": false,
   "tiltable": false
  },
  {
   "id": "I02",
   "length_mm": 600,
   "width_mm": 400,
   "height_mm": 120,
   "weight_kg": 25,
   "stackable": true,
   "max_stack_kg": 1000,
   "fragile": false,
   "tiltable": false
  },
  "... 38 more items"
```

```
  ]
}
```

Kiambatanisho B. Majaribio yote 26

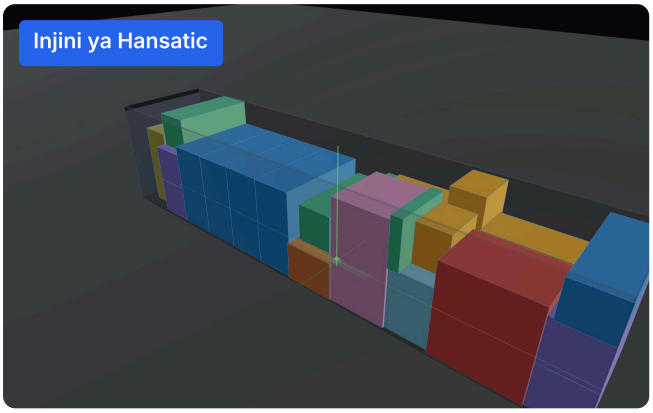
Ukurasa mmoja kwa kila jaribio: mzigo, mpango wa injini pembeni mwa jibu bora halali la modeli, na matokeo ya kila mshiriki.

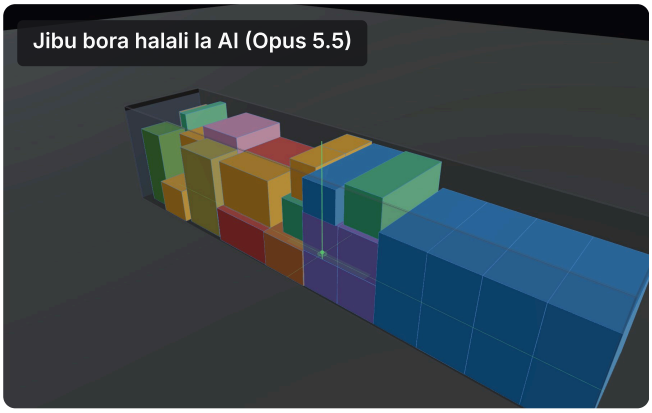
H01 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' High Cube	27	Mzigo mfupi zaidi	Injini mbele kwa tofauti ndogo

Kinachofanya iwe ngumu

27 vitu vinavyopaswa kusimama wima





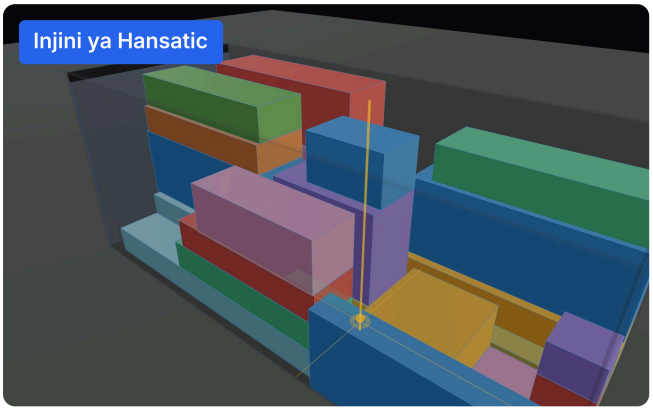
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**26 / 27**	**11.69 m (38.4 ft)**	
GPT-5.5	Halali	25 / 27	11.88 m (39.0 ft)	
Opus 5.5	Halali	26 / 27	11.74 m (38.5 ft)	
Grok 4.7	Halali	25 / 27	11.37 m (37.3 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	22 / 27	11.56 m (37.9 ft)	1 vipimo vibaya vya vitu, 1 nje ya gari, 1 vitu vinavyoelea
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	27 / 27	12.09 m (39.7 ft)	7 vitu vinavyogongana, 14 nje ya gari, 3 juu ya kikomo cha urefu, 1 vitu vinavyoelea, 1 kitovu cha mvuto kimepotea

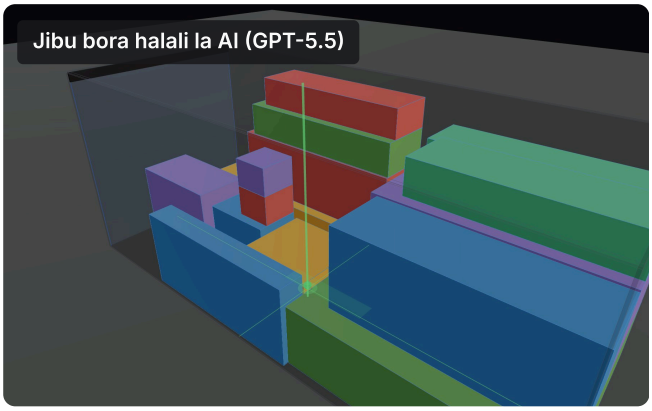
H02 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
20' Dry Container	29	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

29 vitu vinavyopaswa kusimama wima; vitu vyenye urefu wa hadi 5.00 m (16.4 ft); kitu kizito zaidi 1,550 kg (3,417 lb)





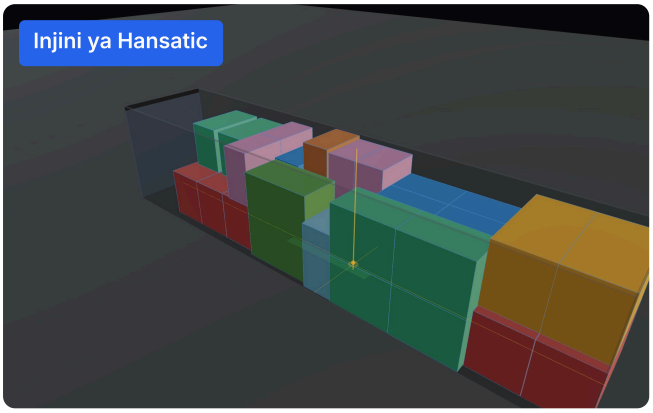
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**24 / 29**	**5.78 m (19.0 ft)**	
GPT-5.5	Halali	18 / 29	5.76 m (18.9 ft)	
Opus 5.5	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Grok 4.7	Hitilafu ya mtoa huduma	-	-	Mtoa huduma alikataa ombi.
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	23 / 29	5.00 m (16.4 ft)	6 vipimo vibaya vya vitu, 13 vitu vinavyogongana, 9 vitu vinavyoelea, 9 vitu vilivyopondwa
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	29 / 29	7.97 m (26.1 ft)	37 vitu vinavyogongana, 23 nje ya gari, 1 juu ya kikomo cha urefu, 7 vitu vinavyoelea, 5 vitu vilivyopondwa, 2 kitovu cha mvuto kimepotea

H03 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' High Cube	32	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

25 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 2,680 kg (5,908 lb)



Hakuna modeli ya AI iliyorejesha mpango halali katika mtakatifu huu.

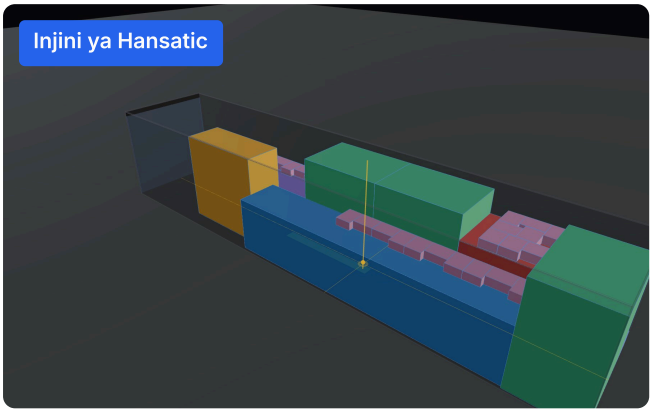
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**31 / 32**	**10.51 m (34.5 ft)**	
GPT-5.5	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Opus 5.5	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Grok 4.7	Haramu	31 / 32	12.03 m (39.5 ft)	1 vitu vilivyopondwa
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	31 / 32	11.81 m (38.7 ft)	1 vipimo vibaya vya vitu, 12 vitu vinavyogongana, 6 nje ya gari, 3 juu ya kikomo cha urefu, 2 vitu vinavyoelea, 3 vitu vilivyopondwa
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Hakuna mpango uliorejeshwa	-	-	Jibu halikukuwa na mpango halali.

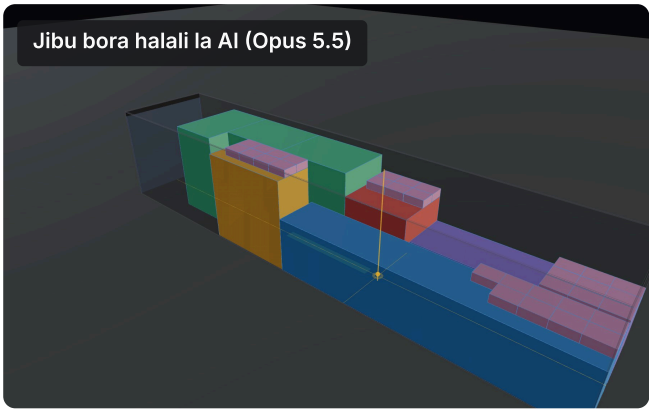
H04 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' Dry Container	39	Mzigo mfupi zaidi	Sawa

Kinachofanya iwe ngumu

vitu vyenye urefu wa hadi 6.30 m (20.7 ft); kitu kizito zaidi 998 kg (2,200 lb)





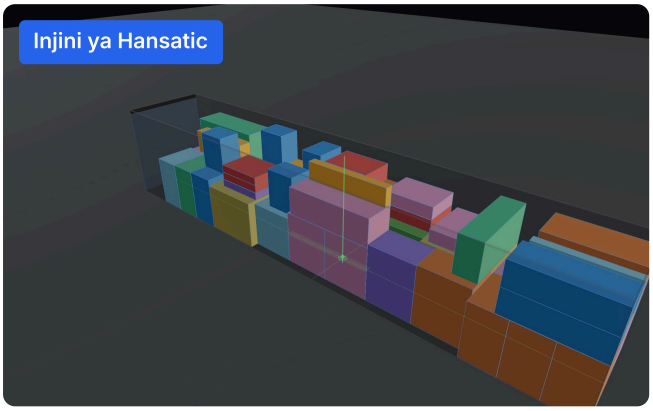
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**39 / 39**	**10.44 m (34.3 ft)**	
GPT-5.5	Halali	39 / 39	10.72 m (35.2 ft)	
Opus 5.5	Halali	39 / 39	10.44 m (34.3 ft)	
Grok 4.7	Halali	39 / 39	11.10 m (36.4 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	29 / 39	6.30 m (20.7 ft)	10 vipimo vibaya vya vitu, 6 vitu vinavyoelea
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	38 / 39	10.20 m (33.5 ft)	1 vipimo vibaya vya vitu, 27 vitu vinavyogongana, 6 nje ya gari, 24 vitu vinavyoelea, 1 vitu vilivyopondwa, 1 kitovu cha mvuto kimepotea

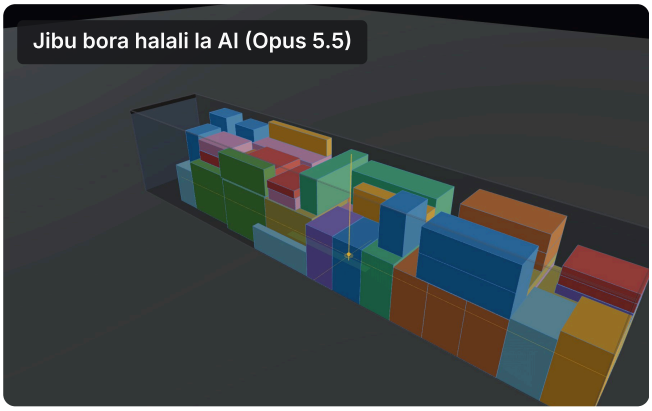
H05 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
45' High Cube	49	Mzigo mfupi zaidi	Sawa

Kinachofanya iwe ngumu

49 vitu vinavyopaswa kusimama wima; 27 vitu vyenye kikomo cha uzito wa kupangwa juu; kitu kizito zaidi 814 kg (1,795 lb)





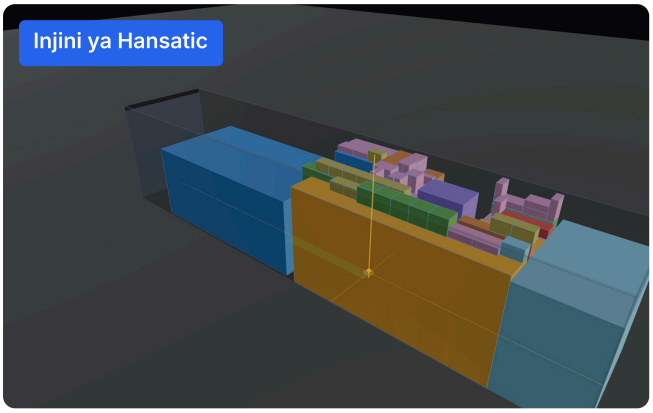
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**49 / 49**	**12.40 m (40.7 ft)**	
GPT-5.5	Halali	45 / 49	13.28 m (43.6 ft)	
Opus 5.5	Halali	49 / 49	12.40 m (40.7 ft)	
Grok 4.7	Halali	43 / 49	12.96 m (42.5 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	37 / 49	10.49 m (34.4 ft)	11 vipimo vibaya vya vitu, 2 vitu vinavyogongana, 5 nje ya gari, 2 juu ya kikomo cha urefu, 3 vitu vinavyoelea, 2 vitu vilivyopondwa
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	47 / 49	12.73 m (41.8 ft)	2 vipimo vibaya vya vitu, 31 vitu vinavyogongana, 9 nje ya gari, 14 juu ya kikomo cha urefu, 21 vitu vinavyoelea, 2 vitu vilivyopondwa

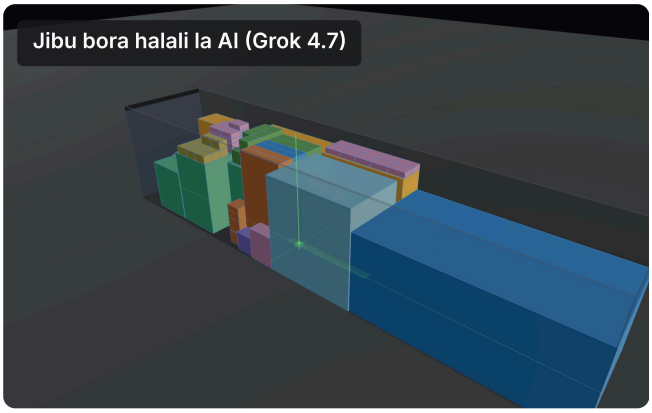
H06 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' High Cube	83	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

5 vitu visivyoruhusiwa kupangwa juu; 1 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 3,020 kg (6,658 lb)





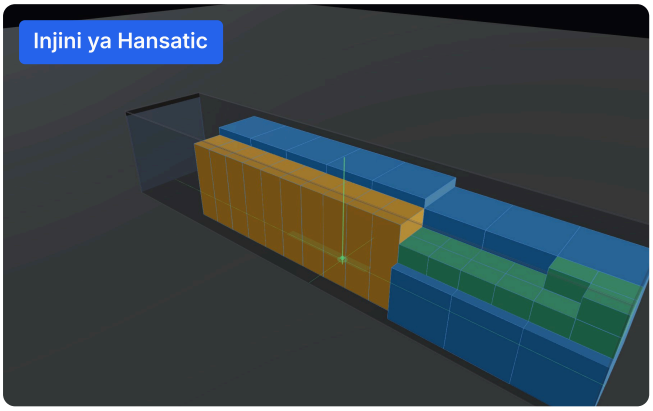
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**83 / 83**	**10.65 m (35.0 ft)**	
GPT-5.5	Halali	83 / 83	11.78 m (38.7 ft)	
Opus 5.5	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Grok 4.7	Halali	83 / 83	11.41 m (37.4 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	7 / 83	6.89 m (22.6 ft)	2 vipimo vibaya vya vitu, 1 kitovu cha mvuto kimepotea
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	20 / 83	12.25 m (40.2 ft)	2 vitu vinavyogongana, 4 nje ya gari, 1 juu ya kikomo cha urefu, 14 vitu vinavyoelea, 1 kitovu cha mvuto kimepotea

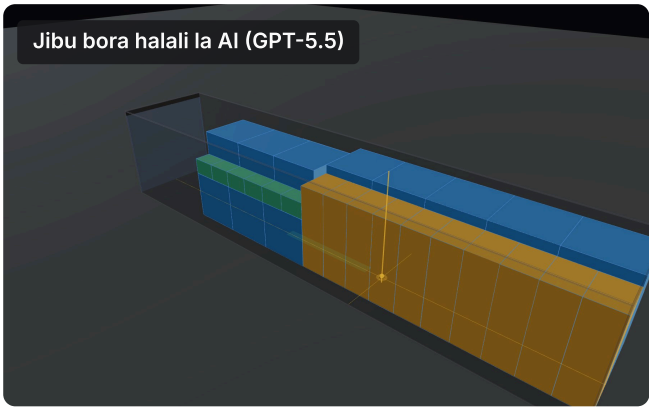
H07 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' Dry Container	45	Mzigo mfupi zaidi	Sawa

Kinachofanya iwe ngumu

10 vitu visivyoruhusiwa kupangwa juu; 15 vitu vinavyopaswa kusimama wima; 15 vitu vyenye kikomo cha uzito wa kupangwa juu; kitu kizito zaidi 1,200 kg (2,646 lb)





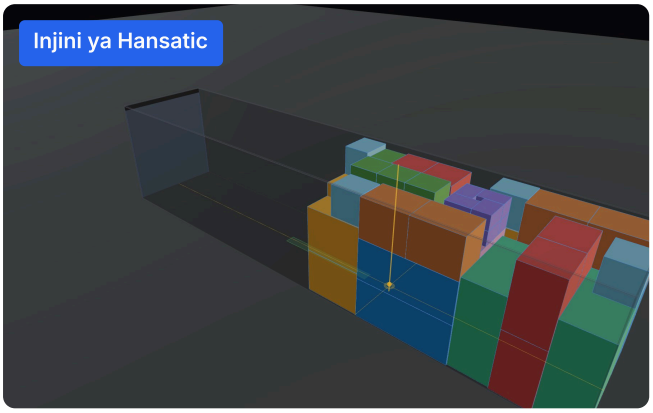
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**45 / 45**	**9.60 m (31.5 ft)**	
GPT-5.5	Halali	45 / 45	9.60 m (31.5 ft)	
Opus 5.5	Halali	45 / 45	9.61 m (31.5 ft)	
Grok 4.7	Haramu	45 / 45	10.80 m (35.4 ft)	1 kitovu cha mvuto kimepotea
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Halali	45 / 45	12.00 m (39.4 ft)	
Gemini 4 Argon	Haramu	32 / 45	7.60 m (24.9 ft)	13 vipimo vibaya vya vitu, 1 vitu vinavyogongana, 16 vitu vinavyoelea
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	10 / 45	12.00 m (39.4 ft)	1 kitovu cha mvuto kimepotea

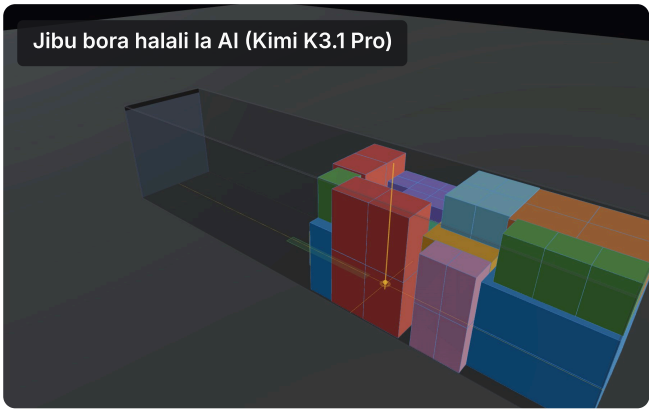
H08 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' High Cube	52	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

52 vitu vinavyopaswa kusimama wima





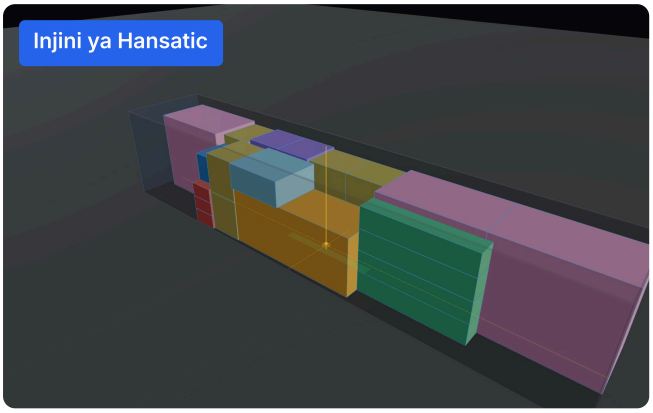
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**52 / 52**	**5.92 m (19.4 ft)**	
GPT-5.5	Halali	52 / 52	6.26 m (20.5 ft)	
Opus 5.5	Halali	52 / 52	6.20 m (20.3 ft)	
Grok 4.7	Halali	52 / 52	6.18 m (20.3 ft)	
Kimi K3.1 Pro	Halali	52 / 52	6.12 m (20.1 ft)	
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	51 / 52	6.51 m (21.4 ft)	1 vipimo vibaya vya vitu, 4 vitu vinavyogongana, 1 vitu vinavyoelea
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	52 / 52	11.25 m (36.9 ft)	14 vitu vinavyogongana, 20 nje ya gari

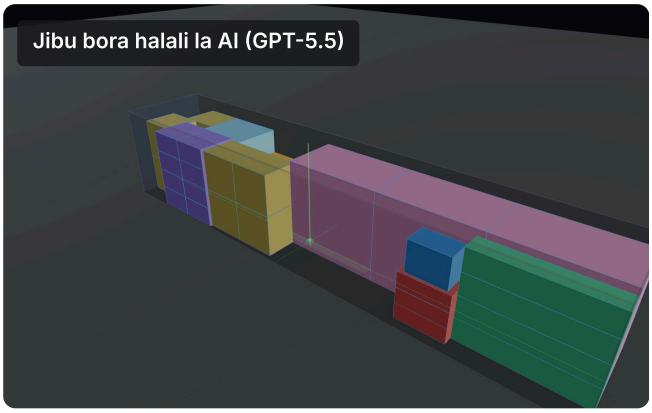
H09 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	30	Mzigo mfupi zaidi	Injini mbele kwa tofauti ndogo

Kinachofanya iwe ngumu

30 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 2,400 kg (5,291 lb)





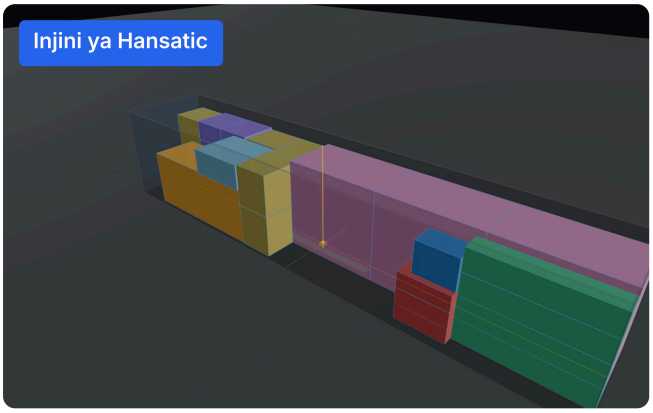
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**29 / 30**	**13.36 m (43.8 ft)**	
GPT-5.5	Halali	29 / 30	13.56 m (44.5 ft)	
Opus 5.5	Halali	29 / 30	13.60 m (44.6 ft)	
Grok 4.7	Halali	29 / 30	13.60 m (44.6 ft)	
Kimi K3.1 Pro	Halali	29 / 30	13.60 m (44.6 ft)	
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	19 / 30	11.60 m (38.1 ft)	11 vipimo vibaya vya vitu, 7 vitu vinavyogongana
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	30 / 30	13.36 m (43.8 ft)	17 vitu vinavyogongana, 25 nje ya gari, 7 vitu vinavyoelea, 1 ekseli imepitiliza mzigo

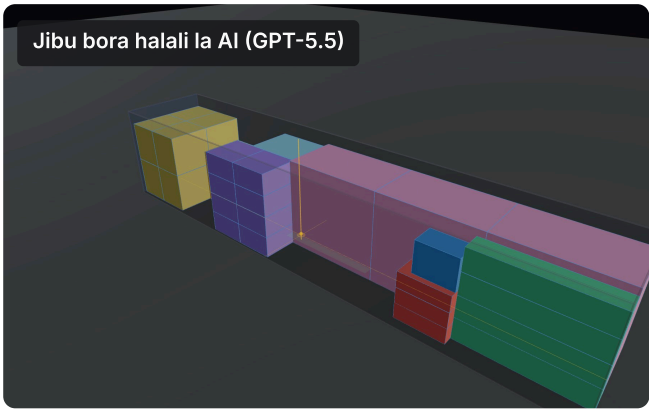
H09 Nafasi za godoro chache zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	30	Nafasi za godoro chache zaidi	Injini mbele kwa tofauti ndogo

Kinachofanya iwe ngumu

30 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 2,400 kg (5,291 lb)





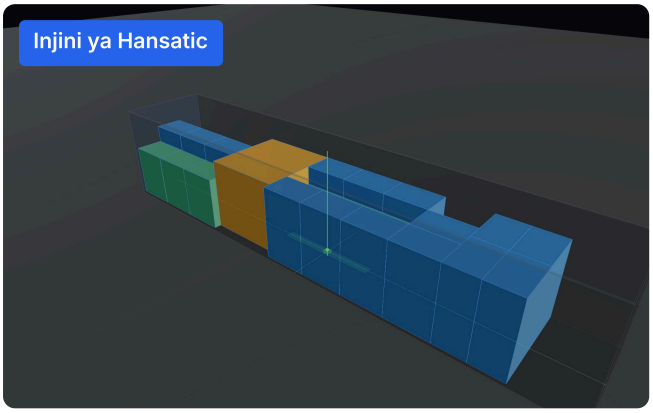
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**29 / 30**	**29 nafasi, 13.36 m (43.8 ft)**	
GPT-5.5	Halali	29 / 30	29 nafasi, 13.60 m (44.6 ft)	
Opus 5.5	Halali	29 / 30	31 nafasi, 13.60 m (44.6 ft)	
Grok 4.7	Halali	29 / 30	29 nafasi, 13.62 m (44.7 ft)	
Kimi K3.1 Pro	Halali	29 / 30	29 nafasi, 13.60 m (44.6 ft)	
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	30 / 30	29 nafasi, 11.72 m (38.5 ft)	18 vitu vinavyogongana, 1 nje ya gari, 3 vitu vilivyopondwa, 1 ekseli imepitiliza mzigo
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	30 / 30	34 nafasi, 13.36 m (43.8 ft)	4 vitu vinavyogongana, 25 nje ya gari, 1 ekseli imepitiliza mzigo, 1 mistari isiyo pangwa sawa

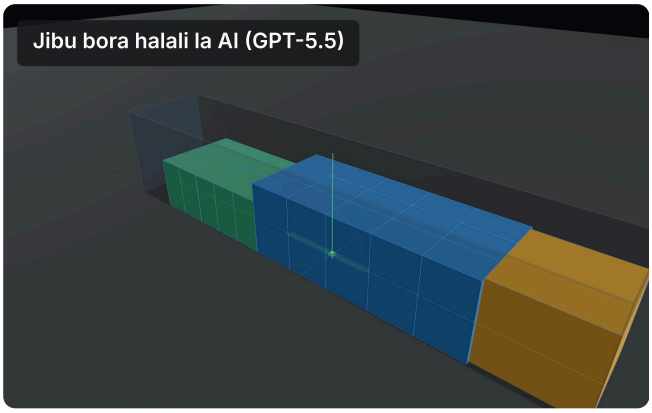
H10 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	26	Mzigo mfupi zaidi	Sawa

Kinachofanya iwe ngumu

26 vitu visivyoruhusiwa kupangwa juu; 16 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 666 kg (1,468 lb)





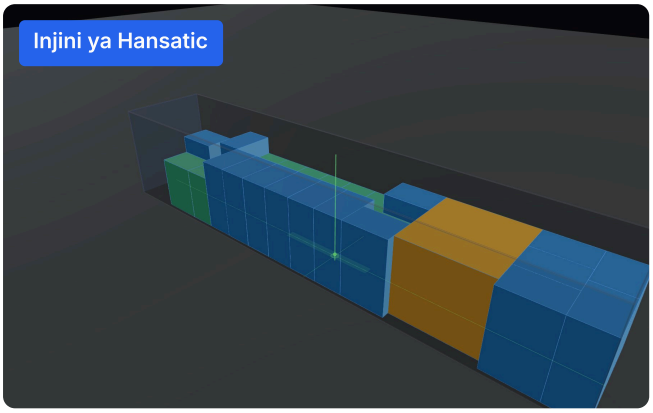
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**26 / 26**	**12.20 m (40.0 ft)**	
GPT-5.5	Halali	26 / 26	12.20 m (40.0 ft)	
Opus 5.5	Halali	26 / 26	12.20 m (40.0 ft)	
Grok 4.7	Halali	26 / 26	12.20 m (40.0 ft)	
Kimi K3.1 Pro	Halali	26 / 26	12.20 m (40.0 ft)	
DeepSeek V4 Pro	Halali	26 / 26	12.20 m (40.0 ft)	
Gemini 4 Argon	Halali	26 / 26	12.60 m (41.3 ft)	
Qwen3p8	Halali	26 / 26	12.20 m (40.0 ft)	
Magistral Medium	Halali	26 / 26	13.00 m (42.7 ft)	

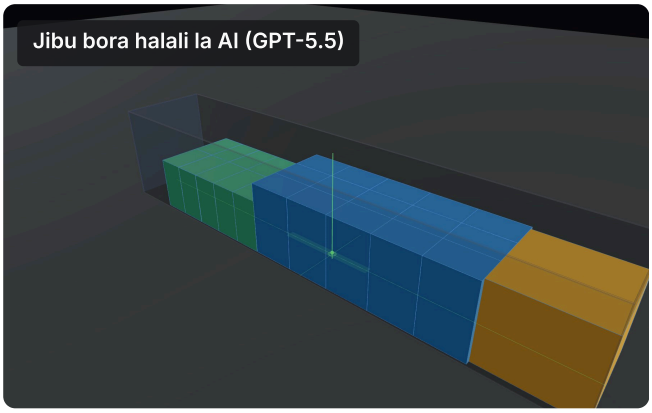
H10 Nafasi za godoro chache zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	26	Nafasi za godoro chache zaidi	Sawa

Kinachofanya iwe ngumu

26 vitu visivyoruhusiwa kupangwa juu; 16 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 666 kg (1,468 lb)





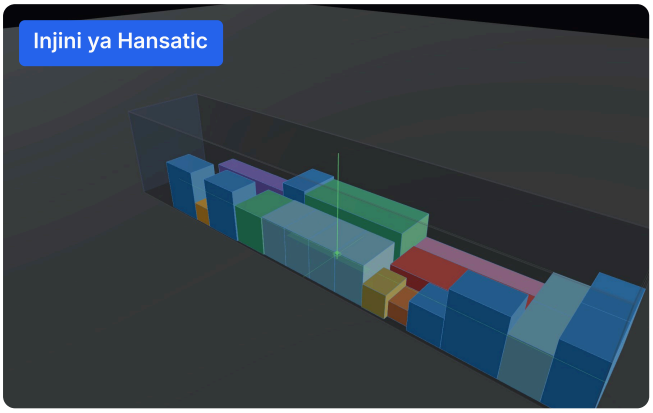
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**26 / 26**	**31 nafasi, 12.20 m (40.0 ft)**	
GPT-5.5	Halali	26 / 26	31 nafasi, 12.20 m (40.0 ft)	
Opus 5.5	Halali	26 / 26	31 nafasi, 13.00 m (42.7 ft)	
Grok 4.7	Halali	26 / 26	31 nafasi, 12.20 m (40.0 ft)	
Kimi K3.1 Pro	Halali	26 / 26	31 nafasi, 12.20 m (40.0 ft)	
DeepSeek V4 Pro	Halali	26 / 26	31 nafasi, 12.20 m (40.0 ft)	
Gemini 4 Argon	Haramu	26 / 26	31 nafasi, 12.60 m (41.3 ft)	1 ekseli imepitiliza mzigo
Qwen3p8	Halali	26 / 26	31 nafasi, 13.00 m (42.7 ft)	
Magistral Medium	Haramu	26 / 26	28 nafasi, 13.00 m (42.7 ft)	10 nje ya gari

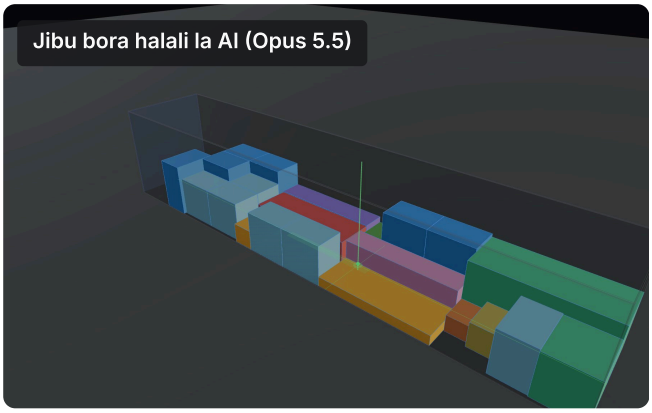
H11 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	23	Mzigo mfupi zaidi	Injini mbele kwa tofauti ndogo

Kinachofanya iwe ngumu

23 vitu visivyoruhusiwa kupangwa juu; 23 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 2,700 kg (5,952 lb)





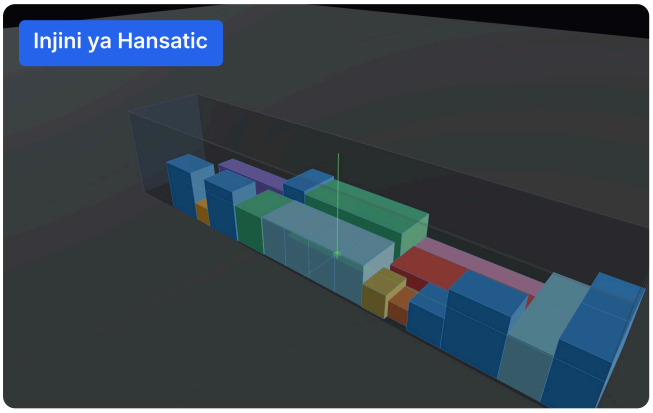
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**23 / 23**	**12.00 m (39.4 ft)**	
GPT-5.5	Halali	23 / 23	12.42 m (40.7 ft)	
Opus 5.5	Halali	23 / 23	12.20 m (40.0 ft)	
Grok 4.7	Halali	23 / 23	12.62 m (41.4 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Halali	23 / 23	13.02 m (42.7 ft)	
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	23 / 23	12.34 m (40.5 ft)	7 vitu vinavyogongana, 8 nje ya gari

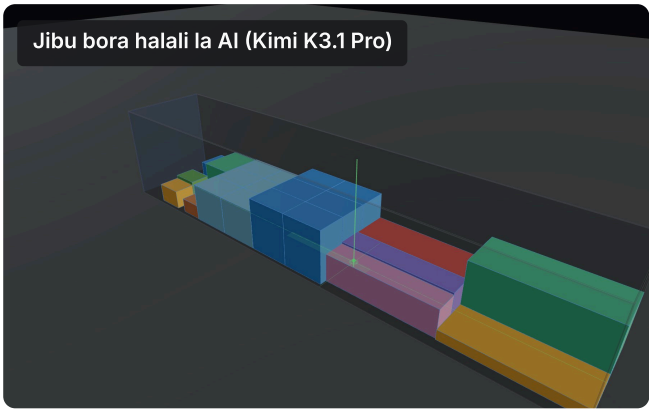
H11 Nafasi za godoro chache zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	23	Nafasi za godoro chache zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

23 vitu visivyoruhusiwa kupangwa juu; 23 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 2,700 kg (5,952 lb)





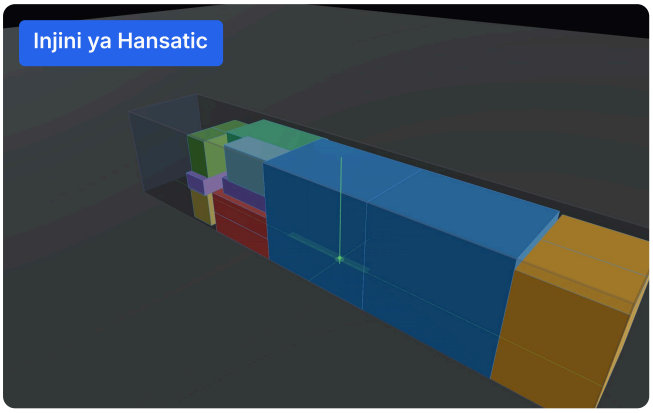
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**23 / 23**	**30 nafasi, 12.00 m (39.4 ft)**	
GPT-5.5	Halali	23 / 23	32 nafasi, 12.64 m (41.5 ft)	
Opus 5.5	Halali	23 / 23	32 nafasi, 12.84 m (42.1 ft)	
Grok 4.7	Hitilafu ya mtoa huduma	-	-	Mtoa huduma alikataa ombi.
Kimi K3.1 Pro	Halali	23 / 23	32 nafasi, 12.62 m (41.4 ft)	
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	22 / 23	30 nafasi, 12.44 m (40.8 ft)	1 vipimo vibaya vya vitu
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	23 / 23	30 nafasi, 12.60 m (41.3 ft)	11 vitu vinavyogongana, 9 nje ya gari

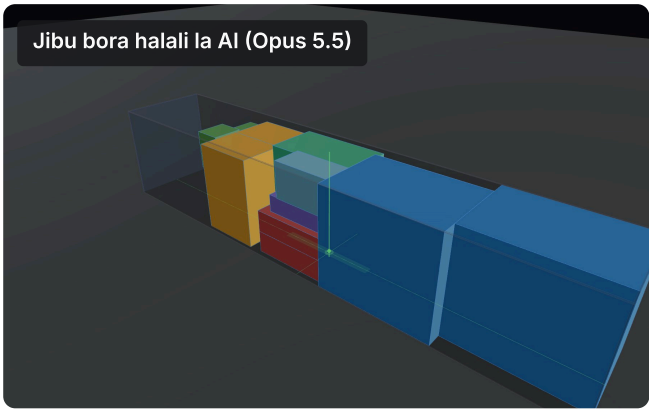
H12 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	14	Mzigo mfupi zaidi	Sawa

Kinachofanya iwe ngumu

6 vitu visivyoruhusiwa kupangwa juu; 9 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 732 kg (1,614 lb)





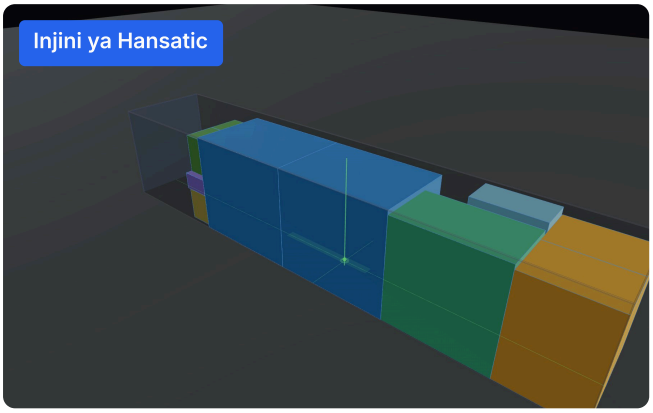
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**13 / 14**	**11.00 m (36.1 ft)**	
GPT-5.5	Halali	13 / 14	11.40 m (37.4 ft)	
Opus 5.5	Halali	13 / 14	11.00 m (36.1 ft)	
Grok 4.7	Hitilafu ya mtoa huduma	-	-	Mtoa huduma alikataa ombi.
Kimi K3.1 Pro	Halali	13 / 14	11.00 m (36.1 ft)	
DeepSeek V4 Pro	Halali	13 / 14	11.70 m (38.4 ft)	
Gemini 4 Argon	Halali	13 / 14	11.00 m (36.1 ft)	
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	14 / 14	13.50 m (44.3 ft)	5 vitu vinavyogongana, 5 nje ya gari, 2 vitu vinavyoelea

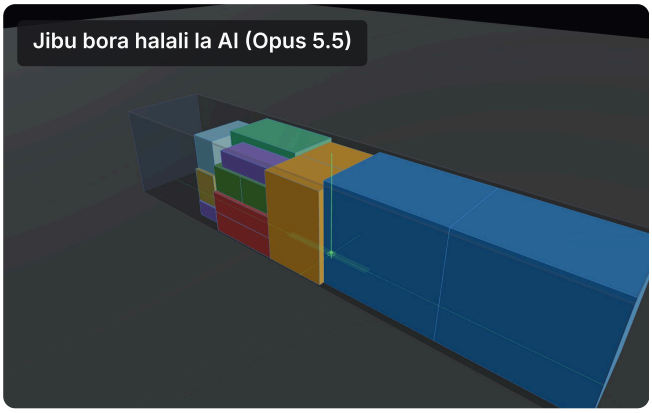
H12 Nafasi za godoro chache zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	14	Nafasi za godoro chache zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

6 vitu visivyoruhusiwa kupangwa juu; 9 vitu vinavyopaswa kusimama wima; kitu kizito zaidi 732 kg (1,614 lb)





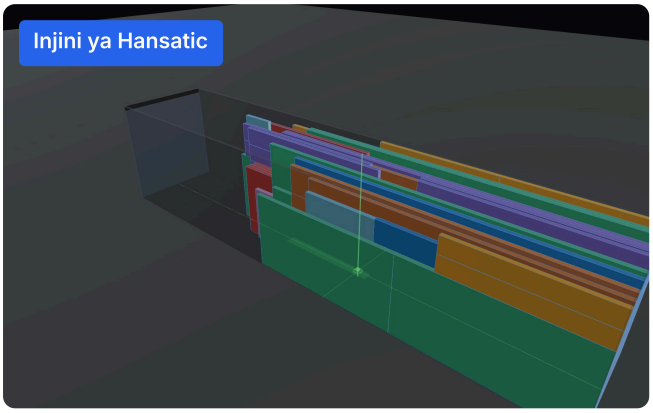
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**13 / 14**	**25 nafasi, 11.00 m (36.1 ft)**	
GPT-5.5	Halali	13 / 14	29 nafasi, 11.73 m (38.5 ft)	
Opus 5.5	Halali	13 / 14	28 nafasi, 11.00 m (36.1 ft)	
Grok 4.7	Hitilafu ya mtoa huduma	-	-	Mtoa huduma alikataa ombi.
Kimi K3.1 Pro	Halali	13 / 14	28 nafasi, 11.00 m (36.1 ft)	
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Halali	13 / 14	28 nafasi, 11.15 m (36.6 ft)	
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	14 / 14	33 nafasi, 13.20 m (43.3 ft)	9 vitu vinavyogongana, 9 nje ya gari

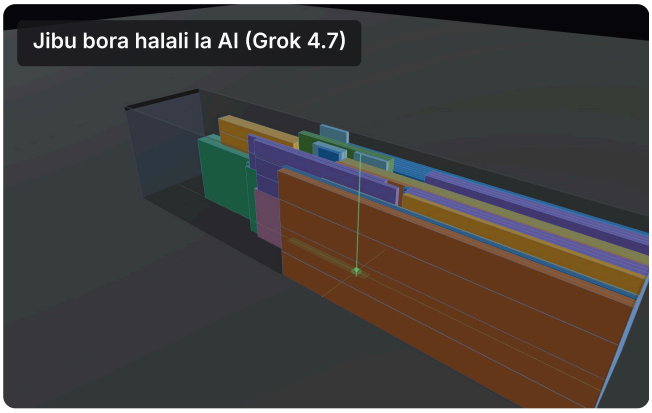
BV1 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' High Cube	103	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

37 vitu vinavyopaswa kusimama wima; vitu vyenye urefu wa hadi 8.27 m (27.1 ft)





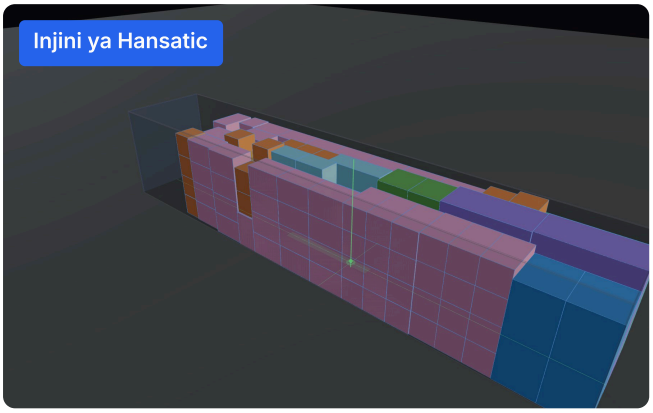
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**103 / 103**	**9.17 m (30.1 ft)**	
GPT-5.5	Halali	92 / 103	8.27 m (27.1 ft)	
Opus 5.5	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Grok 4.7	Halali	103 / 103	10.66 m (35.0 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	77 / 103	8.36 m (27.4 ft)	1 vipimo vibaya vya vitu, 4 juu ya kikomo cha urefu, 4 vitu vinavyoelea
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	22 / 103	16.54 m (54.3 ft)	9 nje ya gari

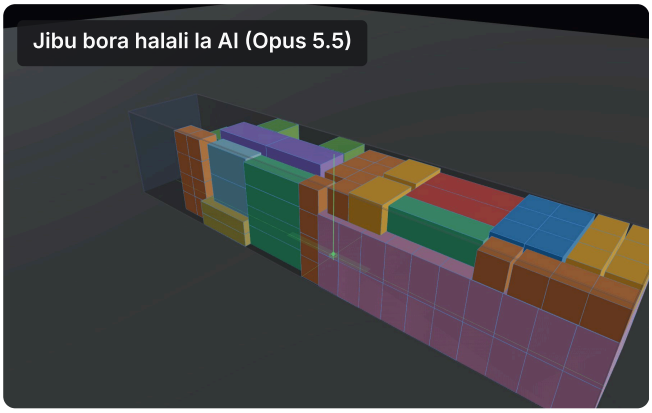
BV2 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	153	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

2 vitu visivyoruhusiwa kupangwa juu; kitu kizito zaidi 578 kg (1,274 lb)





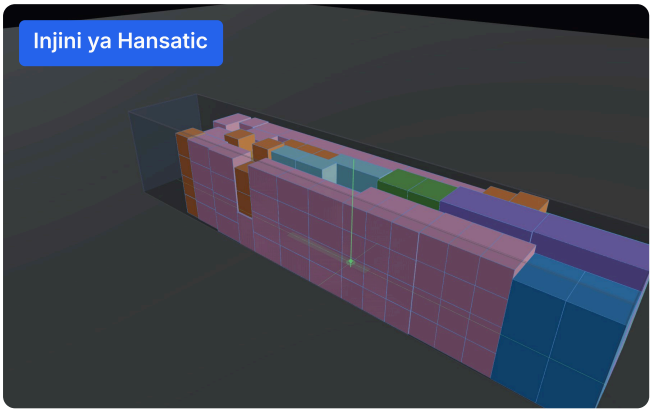
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**153 / 153**	**11.52 m (37.8 ft)**	
GPT-5.5	Halali	153 / 153	13.14 m (43.1 ft)	
Opus 5.5	Halali	153 / 153	11.78 m (38.6 ft)	
Grok 4.7	Halali	153 / 153	12.30 m (40.4 ft)	
Kimi K3.1 Pro	Halali	153 / 153	11.99 m (39.3 ft)	
DeepSeek V4 Pro	Halali	153 / 153	12.79 m (42.0 ft)	
Gemini 4 Argon	Haramu	147 / 153	12.77 m (41.9 ft)	6 vipimo vibaya vya vitu
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	56 / 153	14.02 m (46.0 ft)	39 vitu vinavyogongana, 27 nje ya gari

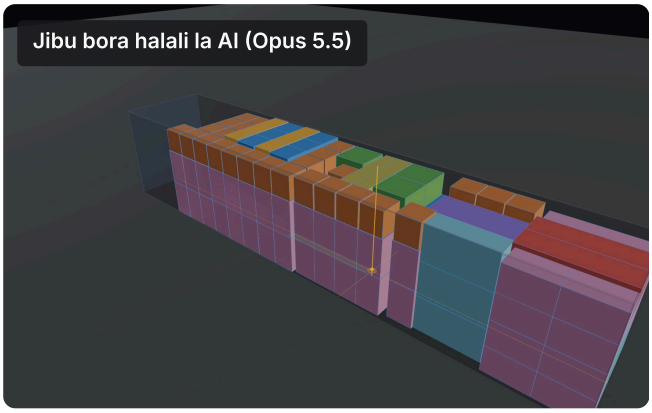
BV2 Nafasi za godoro chache zaidi

Gari	Vipande	Lengo	Matokeo
13.6m Curtainsider	153	Nafasi za godoro chache zaidi	Injini mbele kwa tofauti ndogo

Kinachofanya iwe ngumu

2 vitu visivyoruhusiwa kupangwa juu; kitu kizito zaidi 578 kg (1,274 lb)





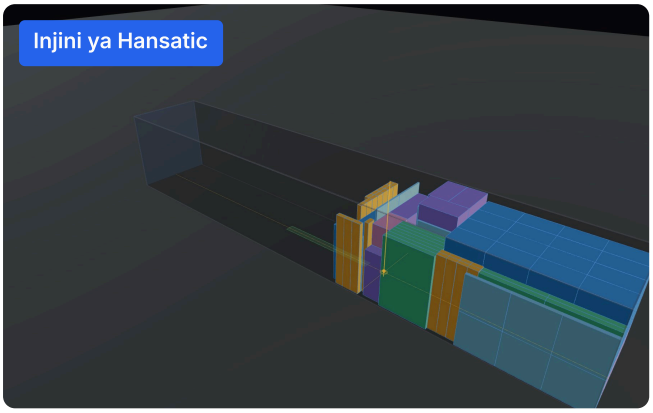
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**153 / 153**	**29 nafasi, 11.52 m (37.8 ft)**	
GPT-5.5	Halali	153 / 153	32 nafasi, 12.60 m (41.3 ft)	
Opus 5.5	Halali	153 / 153	29 nafasi, 11.67 m (38.3 ft)	
Grok 4.7	Halali	153 / 153	32 nafasi, 12.78 m (41.9 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	153 / 153	34 nafasi, 14.82 m (48.6 ft)	7 vitu vinavyogongana, 31 nje ya gari, 86 juu ya kikomo cha urefu, 96 vitu vinavyoelea

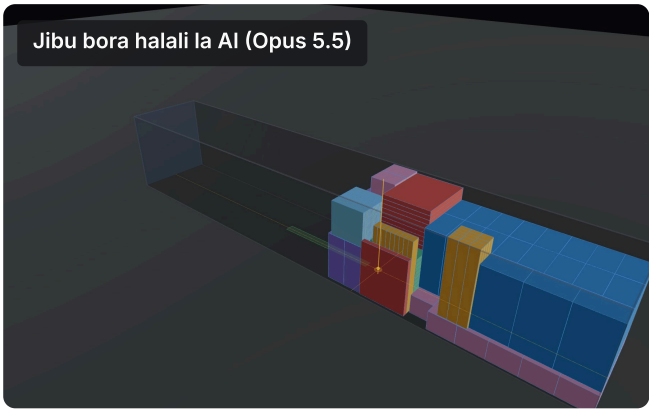
BV3 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
53ft Dry Van	119	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

19 vitu visivyoruhusiwa kupangwa juu; 35 vitu vinavyopaswa kusimama wima





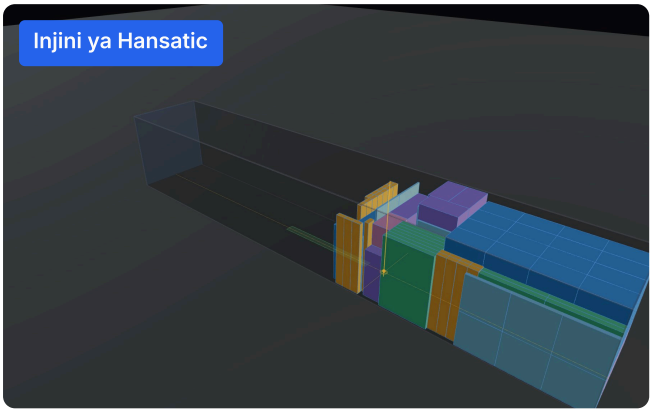
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**119 / 119**	**6.83 m (22.4 ft)**	
GPT-5.5	Halali	119 / 119	9.14 m (30.0 ft)	
Opus 5.5	Halali	119 / 119	6.99 m (22.9 ft)	
Grok 4.7	Halali	119 / 119	8.10 m (26.6 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Jibu halikukuwa na mpango halali.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	115 / 119	8.36 m (27.4 ft)	4 vipimo vibaya vya vitu, 5 vitu vinavyogongana, 3 vitu vilivyopondwa
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	22 / 119	16.76 m (55.0 ft)	11 nje ya gari

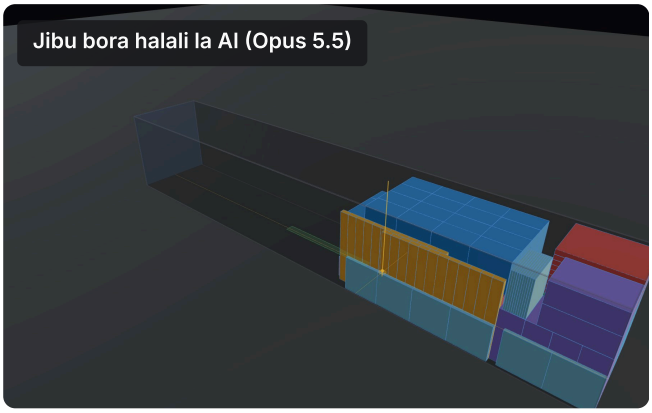
BV3 Nafasi za godoro chache zaidi

Gari	Vipande	Lengo	Matokeo
53ft Dry Van	119	Nafasi za godoro chache zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

19 vitu visivyoruhusiwa kupangwa juu; 35 vitu vinavyopaswa kusimama wima





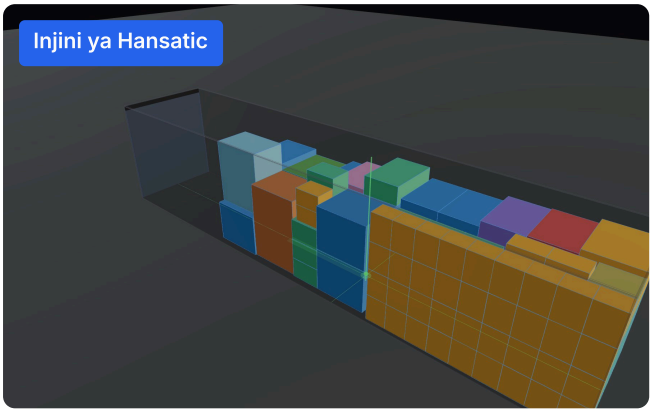
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**119 / 119**	**17 nafasi, 6.83 m (22.4 ft)**	
GPT-5.5	Halali	119 / 119	23 nafasi, 9.07 m (29.8 ft)	
Opus 5.5	Halali	119 / 119	18 nafasi, 6.99 m (22.9 ft)	
Grok 4.7	Halali	119 / 119	22 nafasi, 8.64 m (28.3 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	107 / 119	21 nafasi, 16.18 m (53.1 ft)	12 vipimo vibaya vya vitu, 66 vitu vinavyogongana, 35 nje ya gari, 60 vitu vinavyoelea, 1 vitu vilivyopondwa, 1 makundi huru yasiyo na msaada wa mzigo

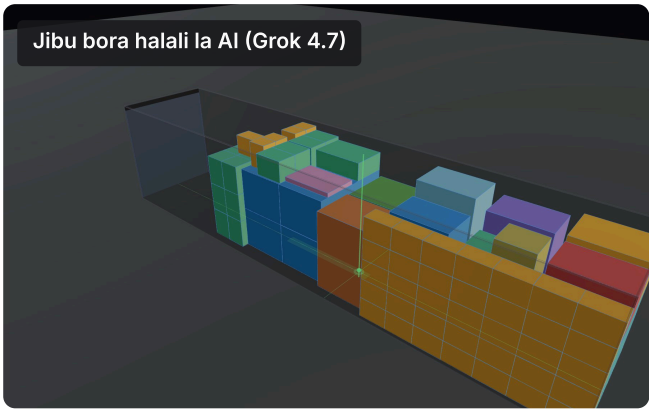
BV4 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' High Cube	145	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

11 vitu visivyoruhusiwa kupangwa juu; 11 vitu nyepesi, juu tu; 20 vitu vinavyopaswa kusimama wima





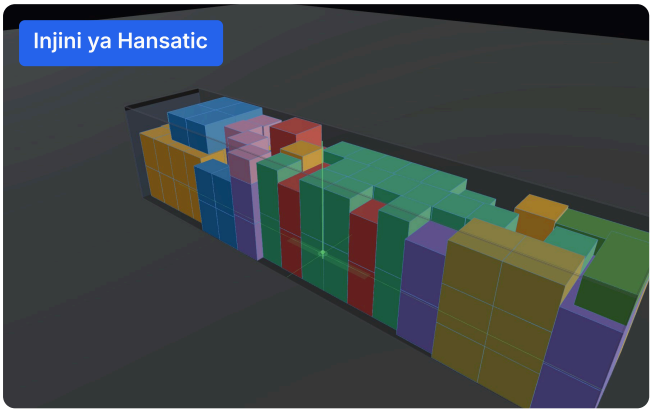
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**145 / 145**	**8.57 m (28.1 ft)**	
GPT-5.5	Halali	145 / 145	11.96 m (39.2 ft)	
Opus 5.5	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Grok 4.7	Halali	145 / 145	8.85 m (29.0 ft)	
Kimi K3.1 Pro	Halali	145 / 145	10.87 m (35.7 ft)	
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	145 / 145	10.05 m (33.0 ft)	19 vitu vinavyogongana, 3 nje ya gari, 9 juu ya kikomo cha urefu, 4 vitu vinavyoelea
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Halali	11 / 145	10.33 m (33.9 ft)	

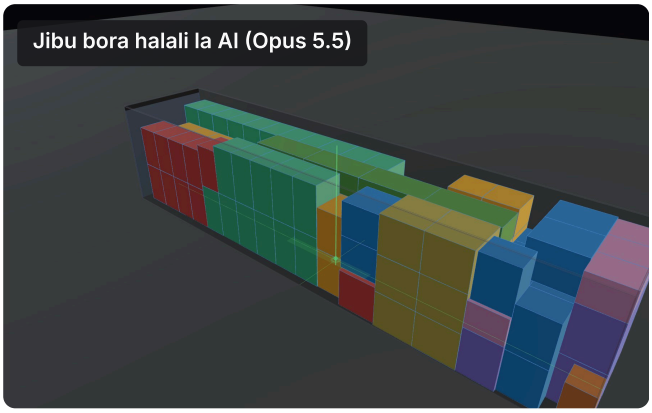
BV5 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' High Cube	136	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

136 vitu vinavyopaswa kusimama wima





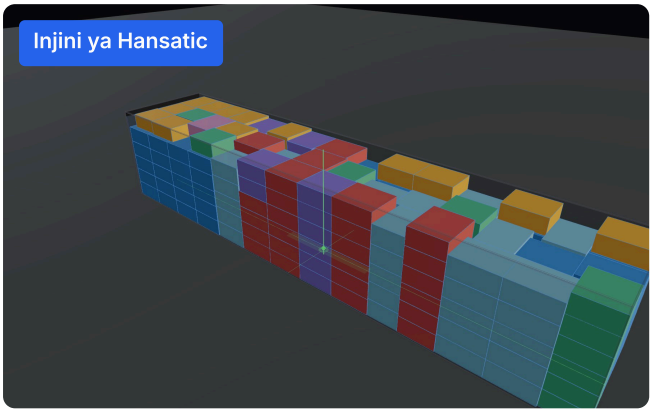
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**127 / 136**	**12.00 m (39.4 ft)**	
GPT-5.5	Halali	115 / 136	11.73 m (38.5 ft)	
Opus 5.5	Halali	124 / 136	11.77 m (38.6 ft)	
Grok 4.7	Halali	115 / 136	11.87 m (39.0 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	121 / 136	12.00 m (39.4 ft)	1 imeelekeza kipenge ambacho lazima kiwe wima, 12 vitu vinavyogongana, 6 nje ya gari, 6 vitu vinavyoelea
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	51 / 136	12.89 m (42.3 ft)	34 nje ya gari, 6 vitu vinavyoelea

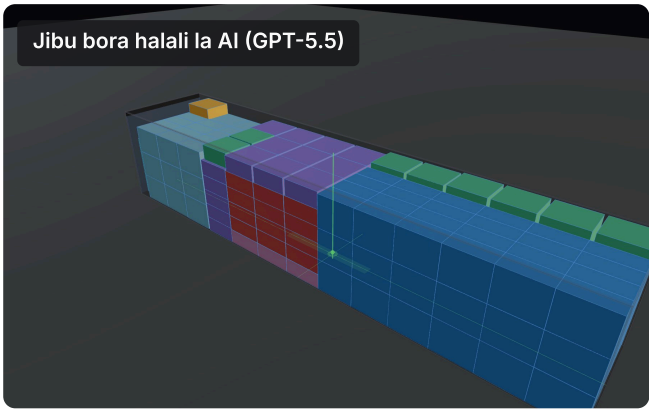
BV6 Mzigo mfupi zaidi

Gari	Vipande	Lengo	Matokeo
40' Dry Container	253	Mzigo mfupi zaidi	Injini mbele kwa wazi

Kinachofanya iwe ngumu

saizi mchanganyiko, hakuna alama maalum





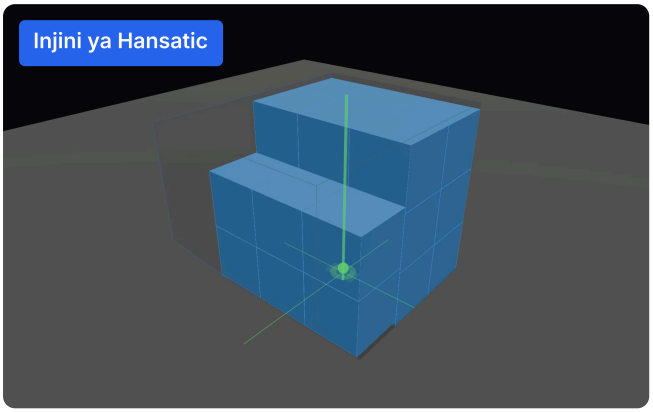
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**244 / 253**	**11.98 m (39.3 ft)**	
GPT-5.5	Halali	238 / 253	11.97 m (39.3 ft)	
Opus 5.5	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Grok 4.7	Halali	218 / 253	11.98 m (39.3 ft)	
Kimi K3.1 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
DeepSeek V4 Pro	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Gemini 4 Argon	Haramu	197 / 253	11.50 m (37.7 ft)	13 vitu vinavyogongana
Qwen3p8	Hakuna mpango uliorejeshwa	-	-	Mfano alifikia kikomo chake cha pato kabla ya kuandika mpango.
Magistral Medium	Haramu	42 / 253	12.18 m (40.0 ft)	3 nje ya gari

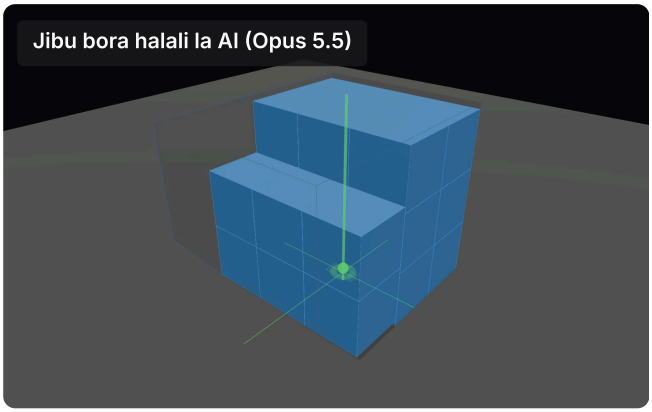
U01 Vipande vingi zaidi vilivyowekwa

Gari	Vipande	Lengo	Matokeo
AKE (LD3)	50	Vipande vingi zaidi vilivyowekwa	Sawa

Kinachofanya iwe ngumu

ukuta ulioinama





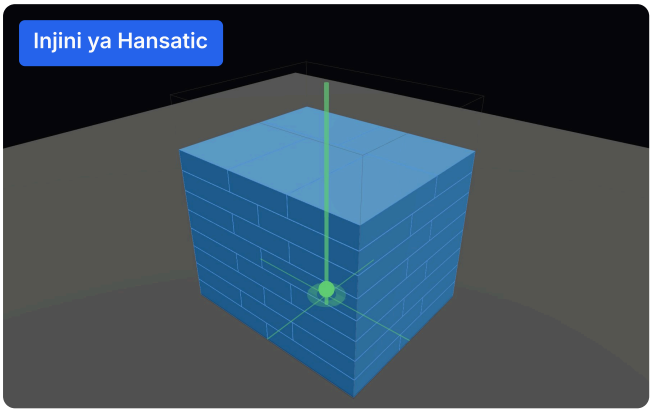
Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**24 / 50**	**24**	
GPT-5.5	Halali	18 / 50	18	
Opus 5.5	Halali	24 / 50	24	
Grok 4.7	Halali	24 / 50	24	
Kimi K3.1 Pro	Halali	24 / 50	24	
DeepSeek V4 Pro	Halali	18 / 50	18	
Gemini 4 Argon	Halali	24 / 50	24	
Qwen3p8	Halali	24 / 50	24	
Magistral Medium	Haramu	24 / 50	24	3 nje ya mpaka wa ULD

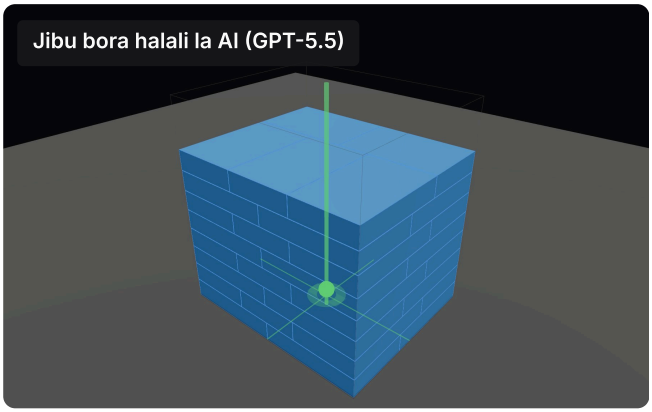
P01 Godoro lililofungamana zaidi

Gari	Vipande	Lengo	Matokeo
Industrial / Block 1200×1000	40	Godoro lililofungamana zaidi	Sawa

Kinachofanya iwe ngumu

40 vitu vinavyopaswa kusimama wima; vitu vyenye urefu wa hadi 0.60 m (2.0 ft)





Mshiriki	Hali	Imewekwa	Alama	Maelezo
Injini ya Hansatic	**Halali**	**40 / 40**	**100%**	
GPT-5.5	Halali	40 / 40	100%	
Opus 5.5	Halali	40 / 40	100%	
Grok 4.7	Halali	40 / 40	100%	
Kimi K3.1 Pro	Halali	40 / 40	100%	
DeepSeek V4 Pro	Halali	40 / 40	100%	
Gemini 4 Argon	Haramu	35 / 40	100%	5 vipimo vibaya vya vitu, 12 vitu vinavyoelea
Qwen3p8	Halali	40 / 40	100%	
Magistral Medium	Haramu	40 / 40	100%	30 vitu vinavyogongana, 9 nje ya gari