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Practical application of AI in large-scale poultry farming

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Institute of Cyberphysical Systems
John von Neumann Faculty of Informatics
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Faculties at Óbuda University (7+1)

- Alba Regia Faculty (AMK)
- Bánki Donát Faculty of Mechanical and Safety Engineering (BGK)
- Kandó Kálmán Faculty of Electrical Engineering (KVK)
- Keleti Károly Faculty of Business and Management (KGK)
- John von Neumann Faculty of Informatics (NIK)
- Rejtő Sándor Faculty of Light Industry and Environmental Protection Engineering (RKK)
- Ybl Miklós Faculty of Architecture and Civil Engineering (YBL)
- University Research and Innovation Center (EKIK)

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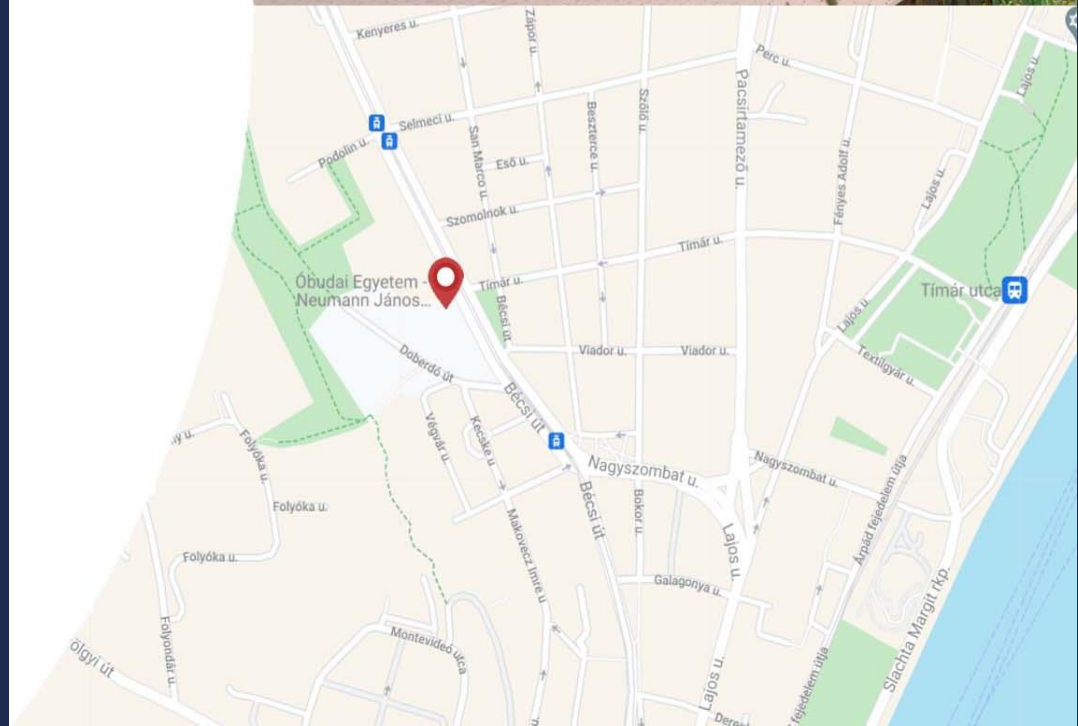
Óbuda University
John von Neumann Faculty of Informatics

- The first dedicated informatics faculty in Hungary
- More than 2800 students ~ 120 staff (~ 80 faculty members)
- BSc, MSc, PhD courses
- Specialised training courses (AI Academy, Cyber Academy)



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University Research and Innovation Center (EKIK)

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- Antal Bejczy Center for Intelligent Robotics (IROB)
- BioTech Research Center (BRC)
- Physiological Controls Research Center (PhysCon)
- Cyber-Medical Competence Center (KIKOK)
- Health Economics Research Center (HECON)
- Alternative Energy Sources Research Center (AESRC)
- Hydro-Bio-Mechanical Systems Research Center (HBM)
- Precision Farming Research Center (Prec_G)

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USING CRISP-DM METHODOLOGY

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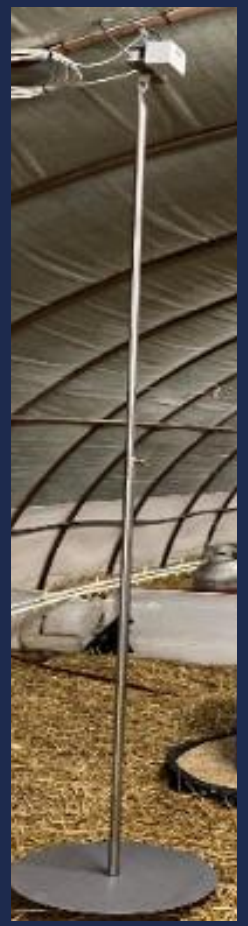
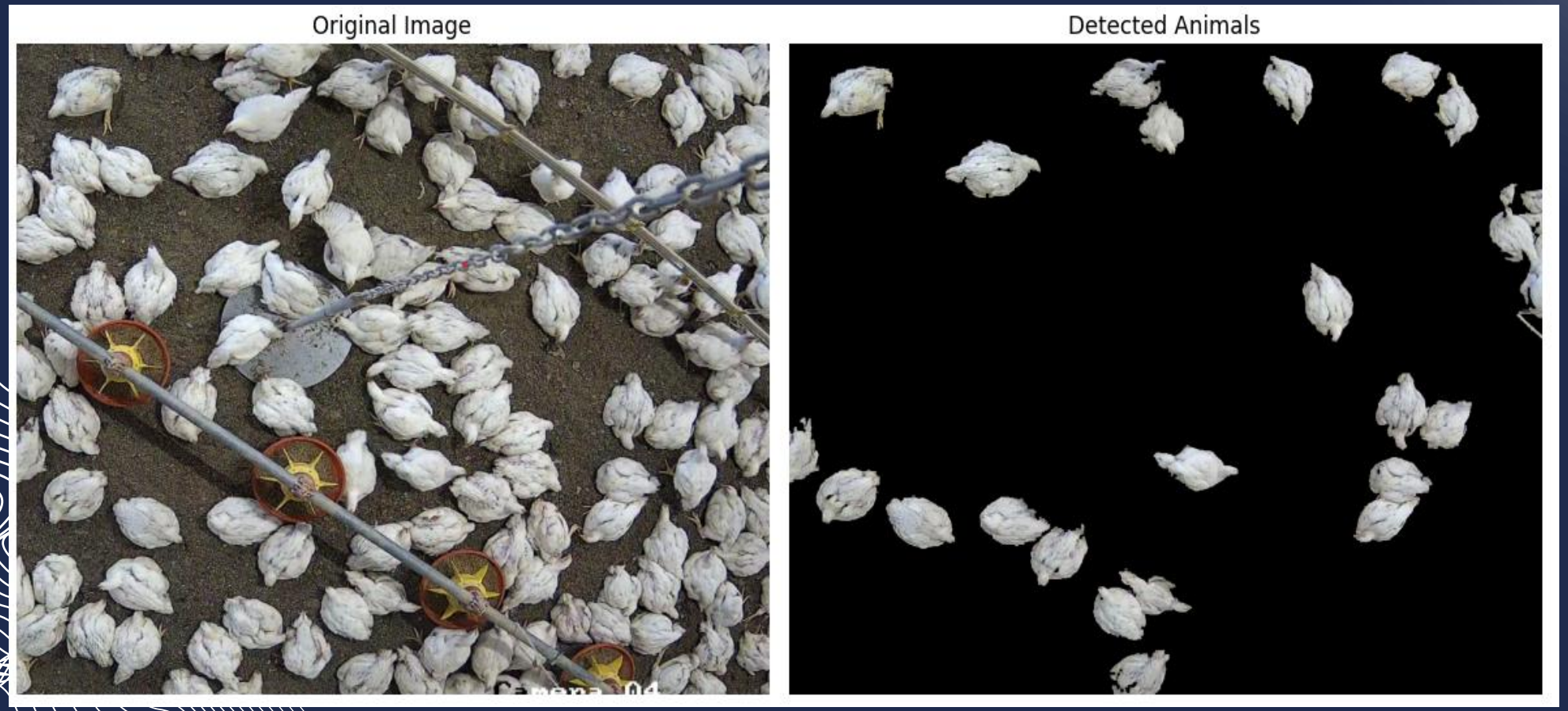
STEP 1.: THE „SIMPLE” QUESTION FROM THE FARMERS

BIRD WATCHER



BIRD WATCHER

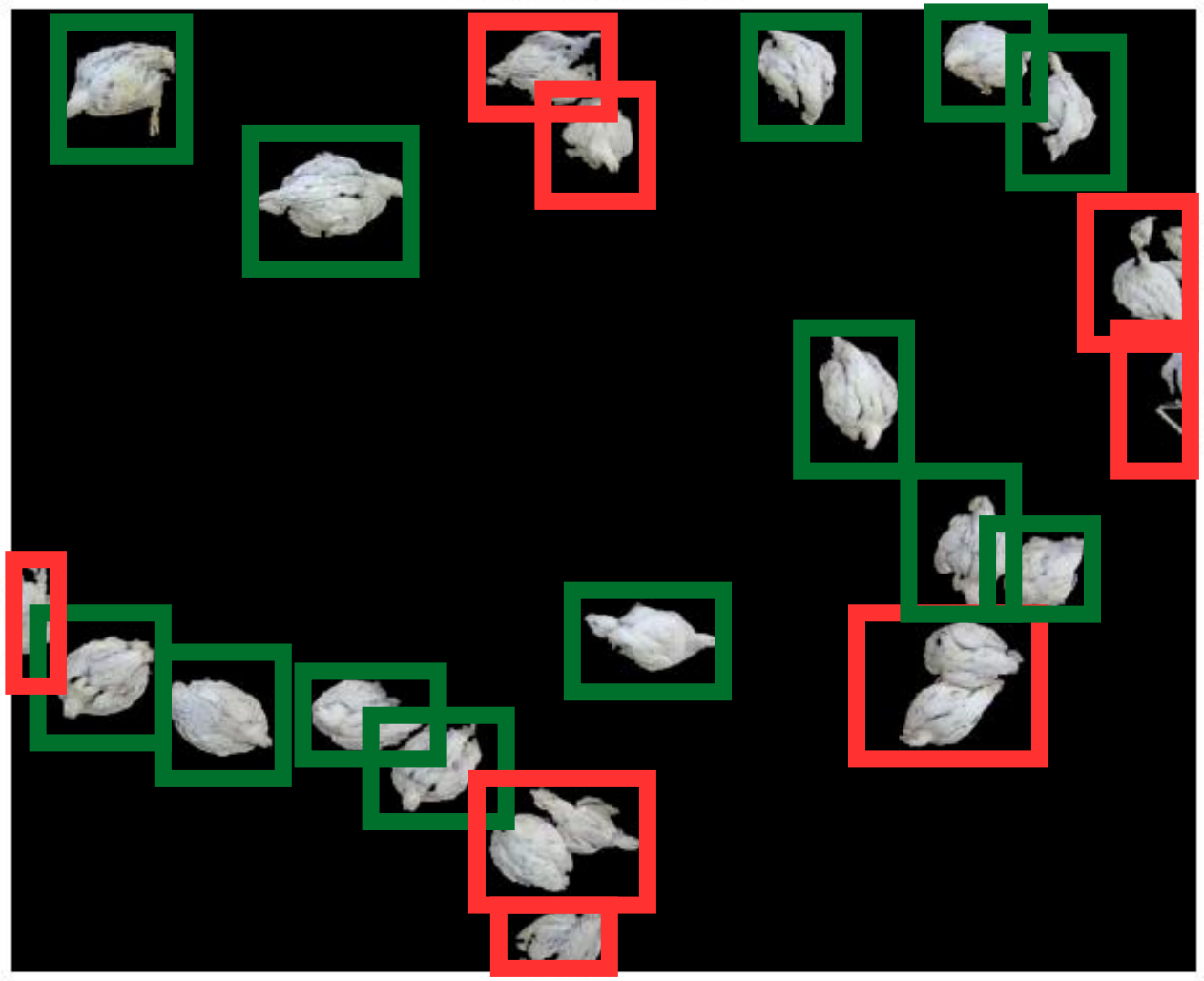
STEP 2: IMAGES BY CAMERAS, WEIGHT DATA BY DIGITAL WEIGHER



STEP 3: INDIVIDUAL WEIGHT ESTIMATION – FEATURE SELECTION

Original Image

Detected Animals



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STEP 4: INDIVIDUAL WEIGHT ESTIMATION – IMAGE AND WEIGHT LOGS

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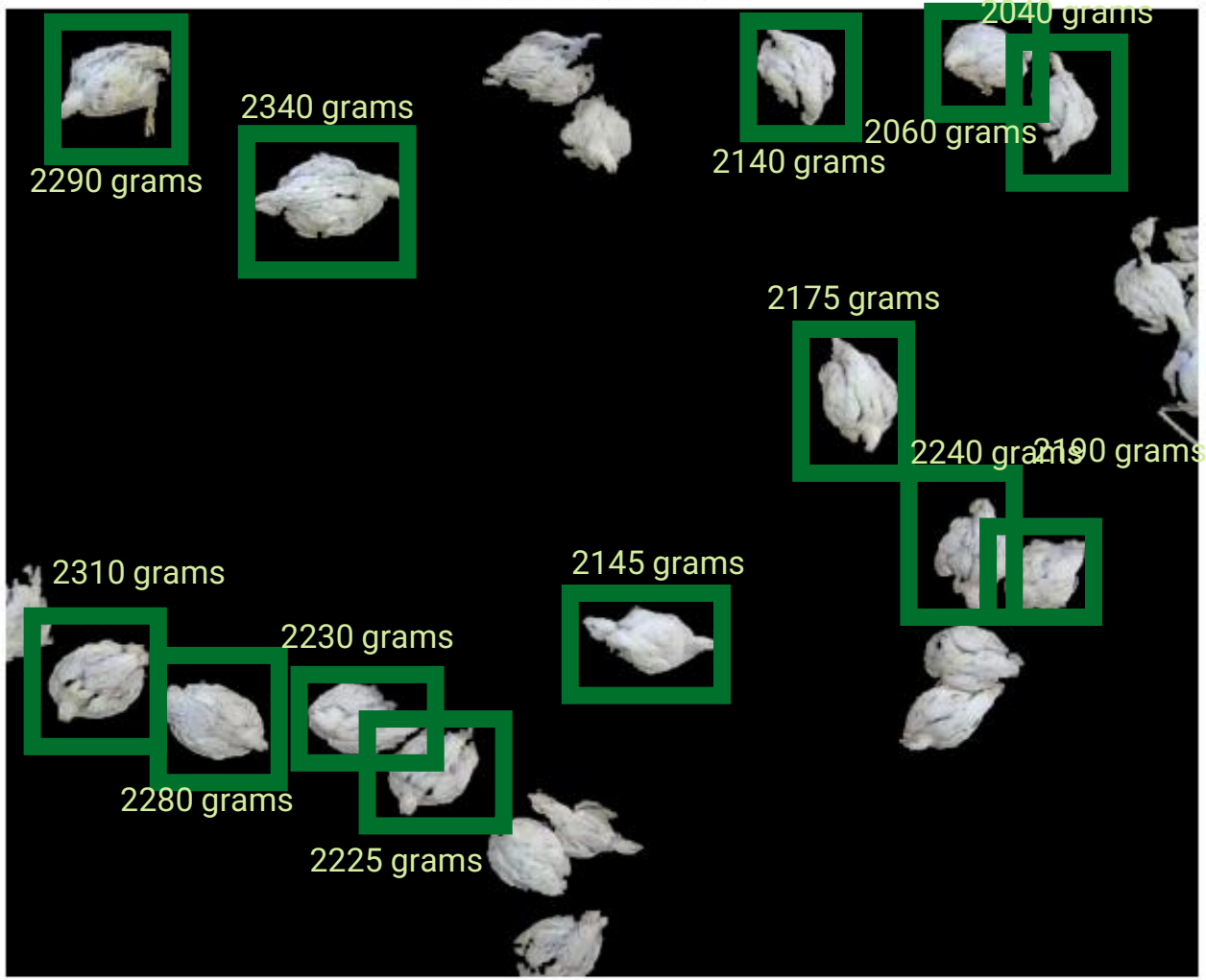
THE ACCURACY IS 96 - 98%

Original Image

Detected Animals



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STEP 5: EVALUATION WITH STATISTICS

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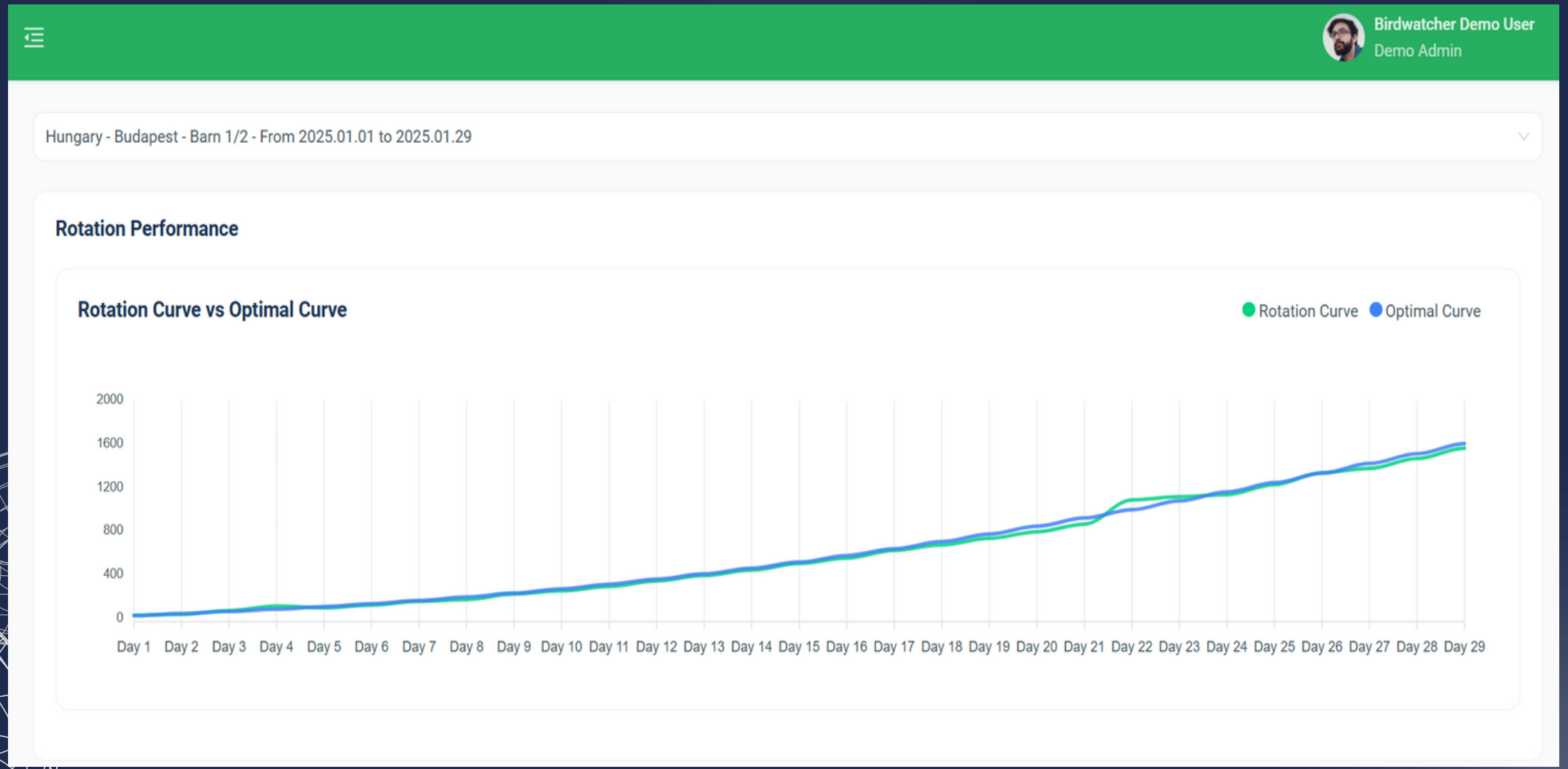

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STEP 5: EVALUATION WITH STATISTICS

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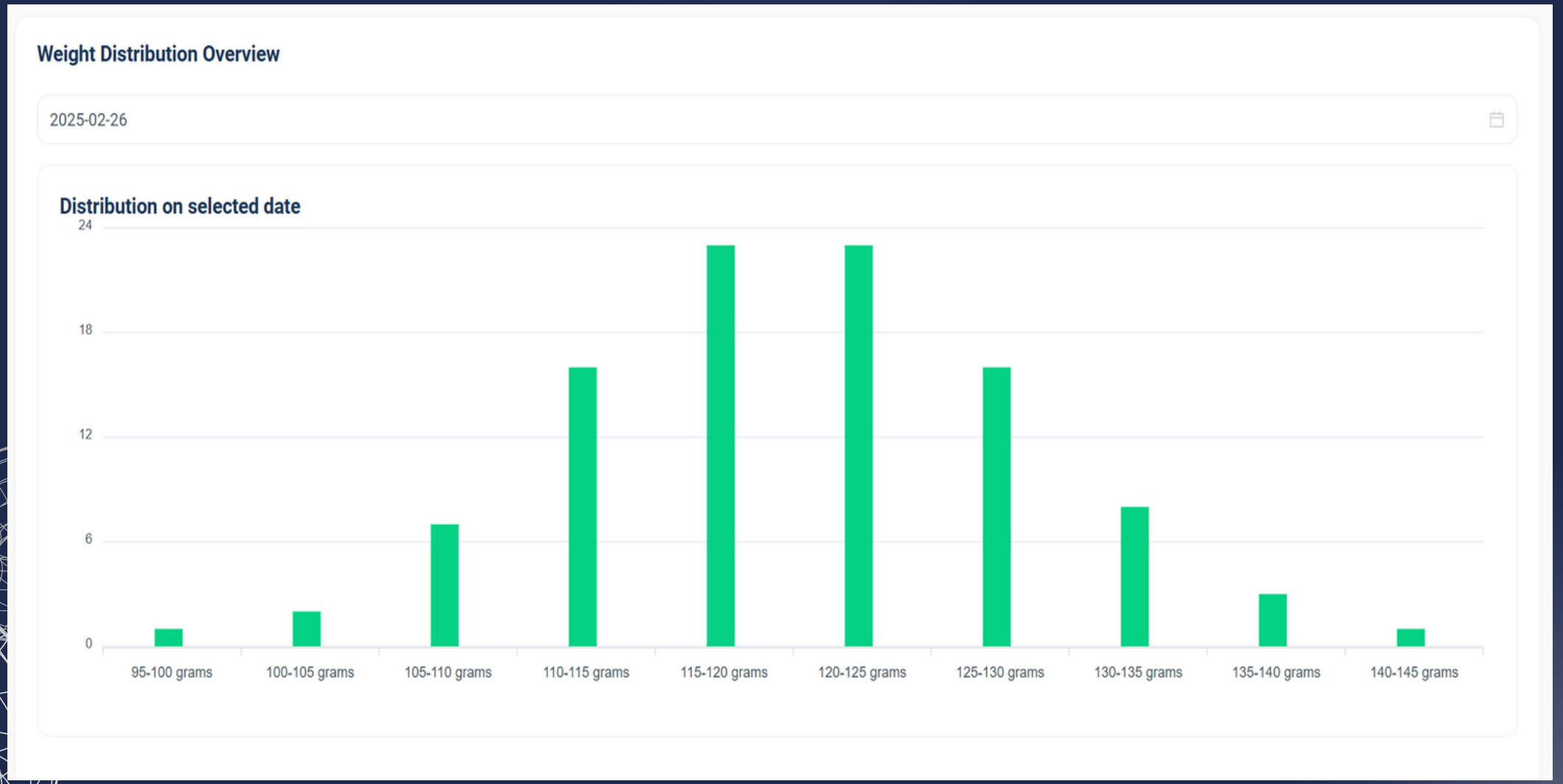

STEP 6.: BUT FURTHER PROBLEMS DURING DEPLOYMENT

- Environment (climate outside and inside)
- Management (eg. Ceiling structure, height of bedding material, daily activities, cleaning of cameras, etc.)
- Equipment
- Internet connectivity, storage capacity
- Birds (genetic background, age, feather coverage, and condition)
- Limitations of conventional Indicators in poultry meat production (Mean Absolute Error, lack of feedback mechanisms)

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THANK YOU FOR YOUR ATTENTION!

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