

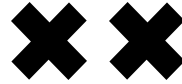
xx

MONITOR SDFC

TEAM 480

xx

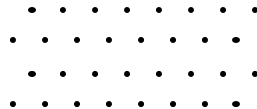




PROBLEM DEFINITION

Although the **Sun Devil Fitness Complex** (SDFC) is a five-story, 73,800-sqft student recreation center, students often encounter a familiar challenge: **overcrowding**.

We imagine building a **computer vision system** tailored specifically for SDFC. With this setup, we can analyze patterns, **identify peak hours** & even predict when equipment's are likely to become available.



WHY IS IT IMPORTANT TO SOLVE?



FACILITY OPTIMIZATION

Allows better allocation of resources such as staffing & equipment



EFFECIENCY

Students can optimize their workouts and make better use of their time



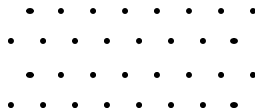
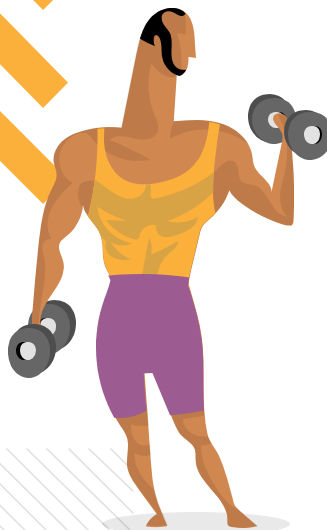
USER EXPERIENCE

Enhancing the student experience by predicting equipment availability



DATA-DRIVEN DECISIONS

Enabling strategic decisions through data-driven insights for facility management



STAKEHOLDERS



ASU ADMINISTRATION



POTENTIAL INVESTORS



ASU GYM STAFF

BENEFICIARIES



ASU STUDENTS



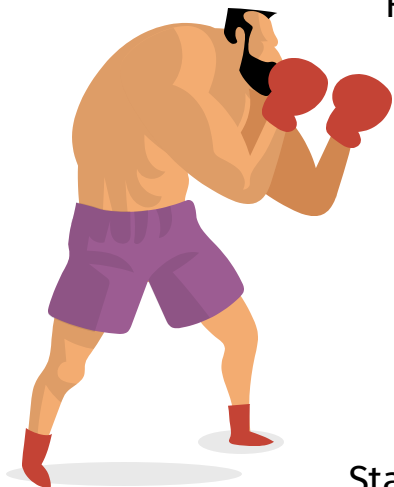
ASU FACULTY



ASU GYM STAFF

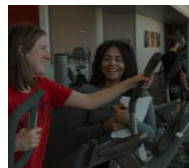


SOLUTION AT PRESENT



PERIODIC ASSESSMENTS

Regular surveys to identify patterns of patrons



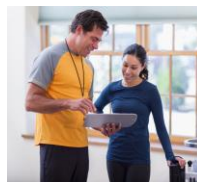
WORD OF MOUTH

Informally share information

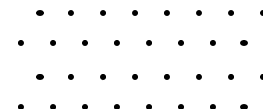
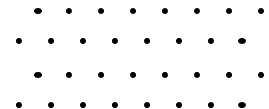


MANUAL MONITORING

Staff members rely on visual observation and tracking



No Real time insights



WHY CV?

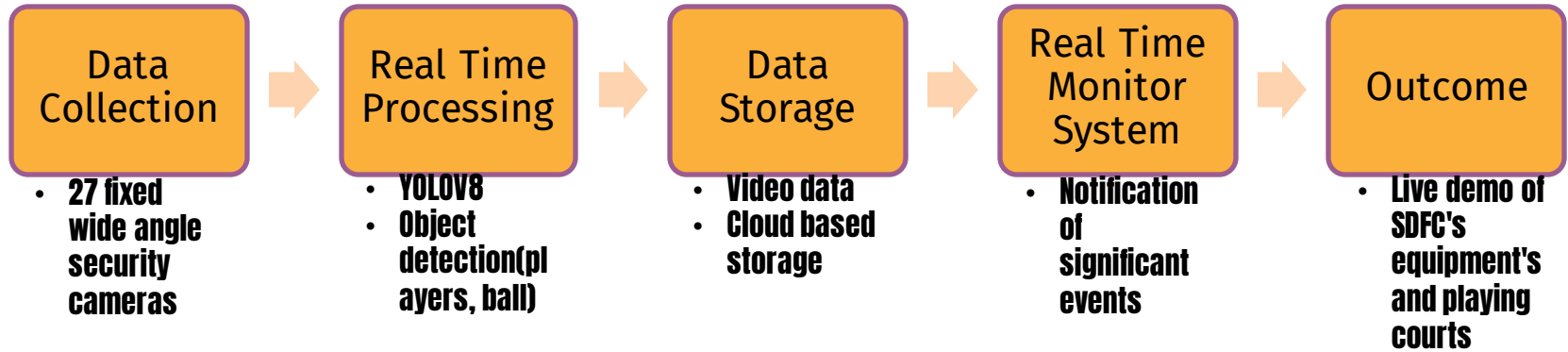
Computer
Vision based
Gym
Management
System

Leverages
existing CCTV

Monitor gym
activity in
real time
efficiently



E2E Product Solution



VS



YOLO Version 8



Layer

53 Convolution Layers

225 Total Layers



Classification

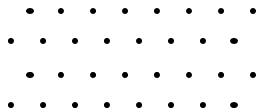
Detect **80** kinds of object



v8 vs. v5

YOLOv8 is **faster**

YOLOv8 is **more accurate**



Demo Basketball Court

Basketball Court



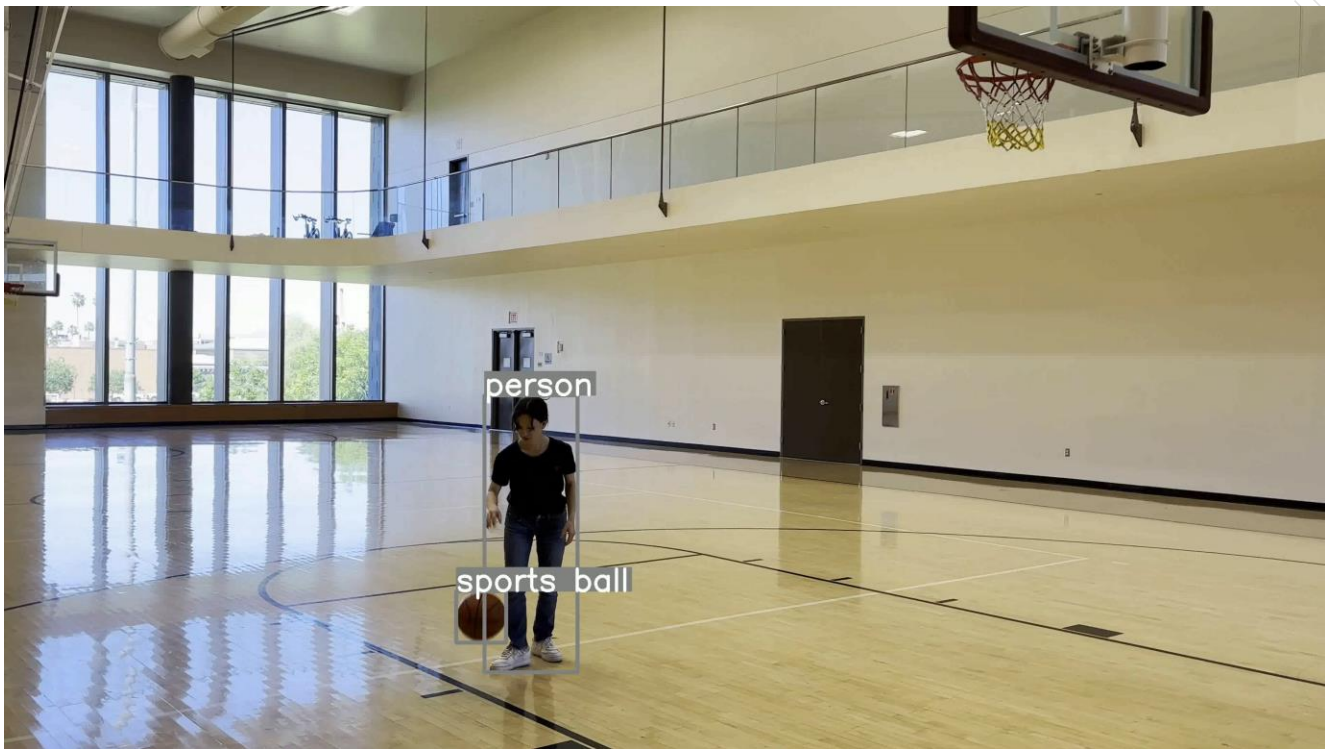
Condition:



Detect people >10sec
Detect sports ball



Do Not Detect people >10sec



Demo Basketball Court

Basketball Court



Condition:



Detect people >10sec
Detect sports ball



Do Not Detect people >10sec

Demo Treadmill

Treadmill



Condition:



Detect people >10sec



Do Not Detect people >10sec

Demo Treadmill

Treadmill



Condition:

- Detect people >10sec
- Do Not Detect people >10sec

Demo Table Tennis

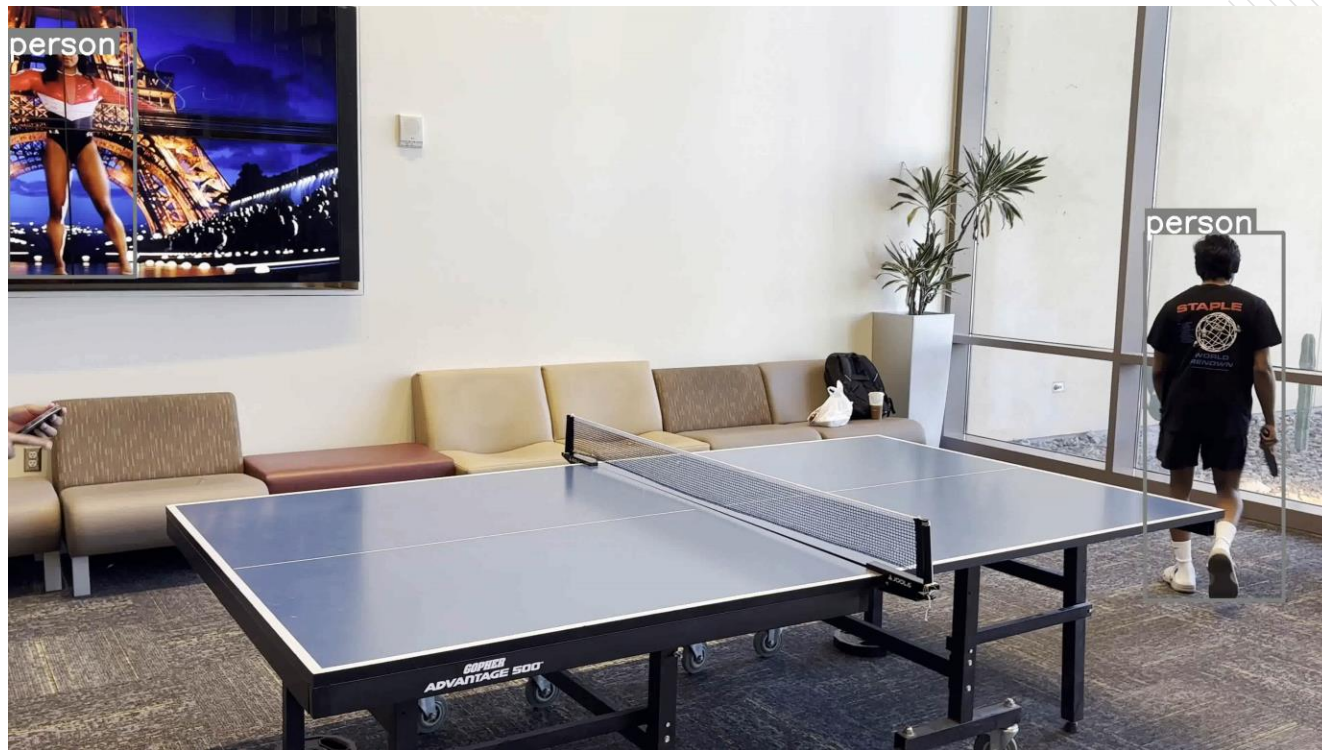
Table Tennis



Condition:

●
Detect people >10sec

●
Do Not Detect people >10sec



Demo Table Tennis

Table Tennis



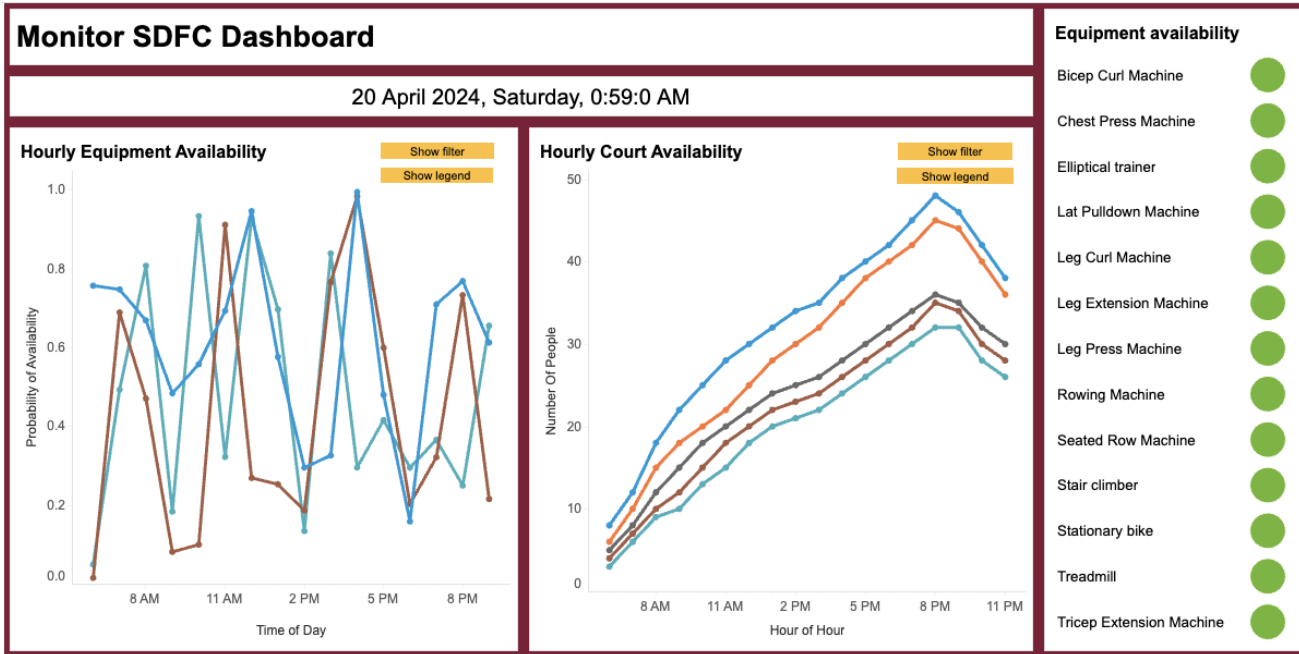
Condition:

●
Detect people >10sec

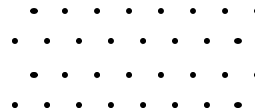
●
Do Not Detect people >10sec

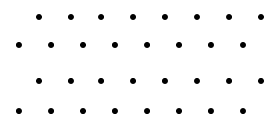
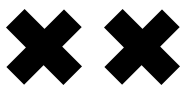


OUR VISION



<https://public.tableau.com/authoring/MonitorSDFC/MonitorSDFC#1>





LIMITATIONS



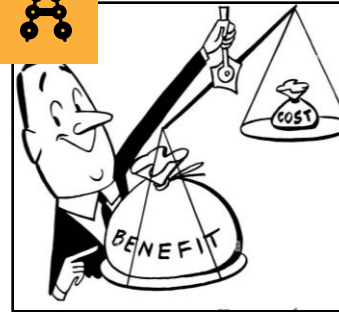
PRIVACY CONCERNS

ASU'S privacy policy prohibits access to the data.



TECHNICAL CHALLENGES

Accurately detecting and tracking individuals in a crowded and dynamic environment



COST VS BENEFIT

Significant investment in hardware, software and personnel training

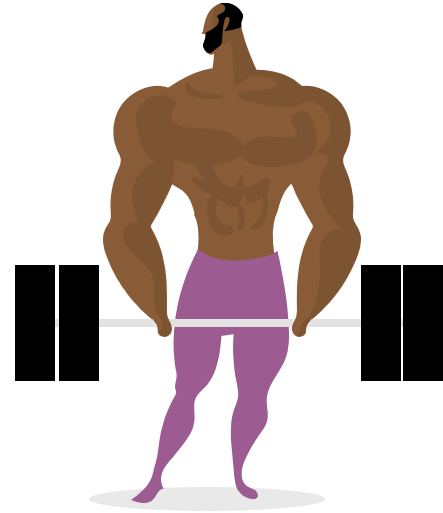


ETHICAL IMPLICATIONS

Students may not be comfortable with being monitored

IMPROVEMENT

- Enhanced Privacy Protocols
- Advanced Analytics Software
- Cost-Benefit Analysis
- Stakeholder Engagement

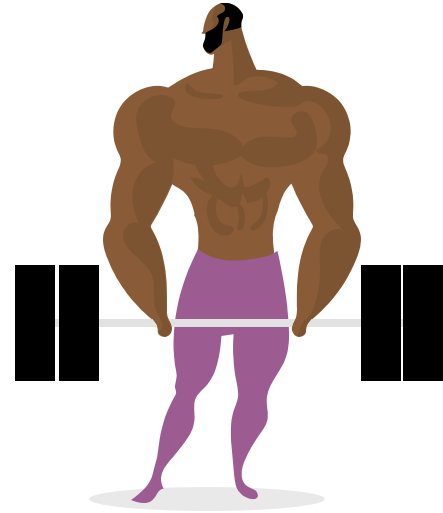


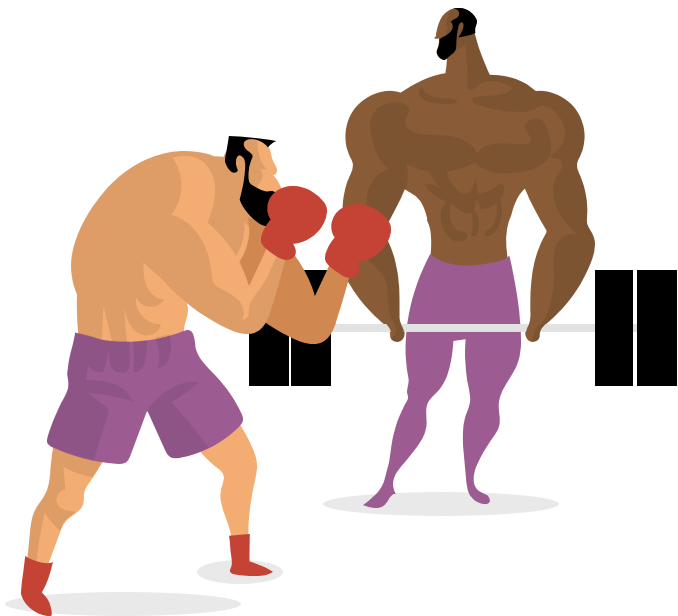
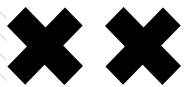
HOUR CONTRIBUTION

NAME	CONTRIBUTION	TASKS	
Sanskriti Kansal	25%	<ul style="list-style-type: none">• Review Existing Solutions• Investigate CV Applications• Content Development	<ul style="list-style-type: none">• Design Presentation Slides• Review & Edit Deck
Alamela Nath	25%	<ul style="list-style-type: none">• Investigate CV Applications• Content Development• Implement CV Algorithm	<ul style="list-style-type: none">• Design Presentation Slides• Review and Edit Deck
Frough Tahiry	25%	<ul style="list-style-type: none">• Investigate CV Applications• Research CV Models• Research and Review the business model	<ul style="list-style-type: none">• Design Presentation Slides• Review and Edit Deck
Donny Yang	25%	<ul style="list-style-type: none">• Review Existing Solutions• Review Privacy Policies• Research CV Models• Implement CV Algorithm• Test CV System	<ul style="list-style-type: none">• Design Presentation Slides• Review & Edit Deck

REFERENCES

- [YOLOv5](#)
- [YOLOv8](#)
- [Plotly](#)
- [OpenCV](#)
- [The Evolution of Gym Management with AI-Powered Mobile App](#)





THANKS!

Does anyone have any questions?