

# **People Counting Infrastructure**



Champ Foronda Team Lead



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Developer



**Joshua Holguin** Developer



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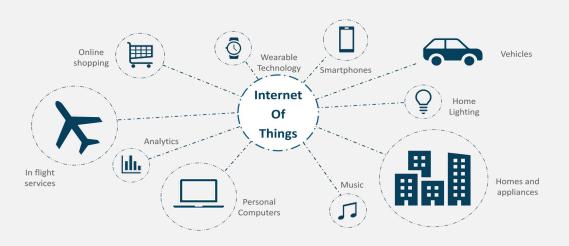
Volodymyr Saruta Team Mentor



**Duane Booher**Client

## **Internet of Things**





- Connectivity
- Cloud infrastructure
- Big data



## **OUR CLIENT**



- Duane Booher
- NAU ITS IoT Team
- Smart and SecureCampus



## The Issues



**PRICE** 

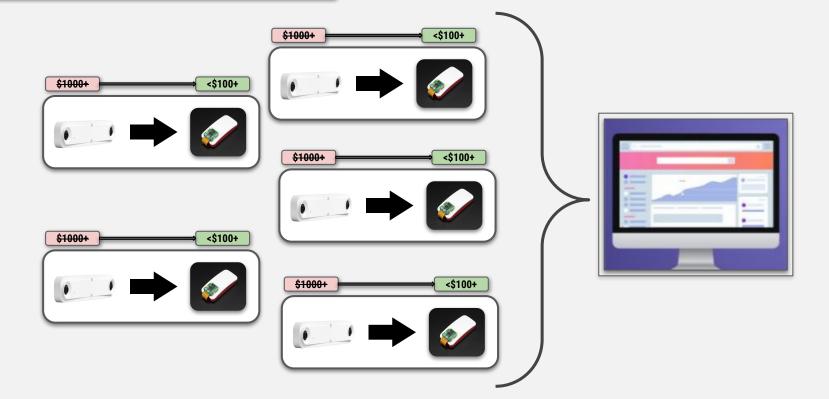
**SCALABILITY** 

3RD PARTY DEPENDENCE



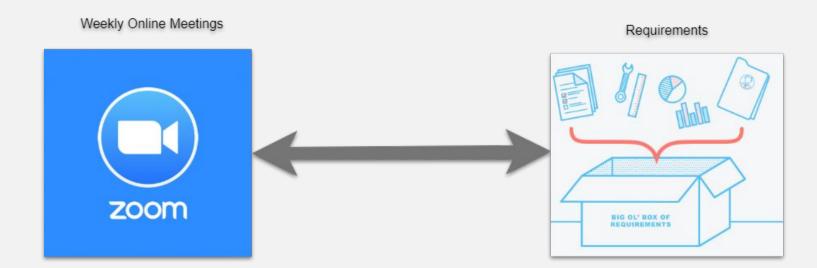
















- Affordable
- Non-invasive Hardware
- Visualize room/building capacity over time
- Visualize current room/building capacity
- Responsive data retrieval



### **Overview of Requirements**

#### **Functional**

#### People recognition

- People counting
- Data storage
- User authentication

#### **Performance**

- Scalability
- Live count updation
- Configurable data

#### **Environmental**

- NAU hosted
- PC/mobile web UI



## Risks and Feasibility

Risk	Description	Likelihood	Severity							
Accuracy	Accuracy in tracking people in crowds	High	Medium-High							
Reliability of Data	People may "Trick" the hardware	Low	Medium							
Overloading Backend	Lag time could be introduced if to many request are sent to the backend at once	Medium	Low							

## Schedule



#### Team PiWatcher - Schedule

Team PiWatcher - Sc	hedule																																					
Current: Week 14																																						
Deliverable	Start Date	End Date	Duration	Percent Complete	Week 1 (8/10)	Week 2 (8/17)	Week 3 (8/24)	Week 4 V (8/31)	Veek 5 Wer (9/7) (9/	k 6 Wa (4) (9	eek 7 Wer /21) (9/	ek 8 We 28) (1	eek 9 V (0/5) (	Veek 10 V (10/12)	Week 11 V (10/19)	Veek 12 We (10/26) (1	eek 13 11/2)	Week 14 (11/9)	Week 15 (11/16)	Week 16 (11/23)	Next Semester	Week 17 (1/11)	Week 18 (1/18)	Week 19 (1/25)	Week 2 (2/1)	0 Week 2 (2/8)	Week 22 (2/15)	Week 23 (2/22)	Week 24 (3/1)	Week 25 (3/8)	Week 26 (3/15)	Week 27 (3/22)	Week 28 (3/29)	Week 29 (4/5)	Week 30 (4/12)	Week 31 (4/19)	Week 32 (4/26)	Week 33 (5/3)
Team Standards	8/31/2020	9/18/2020	3	100%				Team	Standards																													
Team Inventory	8/31/2020	9/19/2020	3	100%				Team	Inventory																													
Mini-Intro	9/7/2020	9/25/2020	3	100%					Mini	ntro																												
Team Website	9/14/2020	10/2/2020	3	100%						1000	Website																											
Technological Feasibility Draft	9/21/2020	10/9/2020	3	100%						1	echnologic Dr	al Feasibi aft																										
Technological Feasibility Final	10/12/2020	10/23/2020	2	100%										Technolo Feasibility	gical y Final																							
Requirements Specification Draft	10/5/2020	11/6/2020	5	100%									Rec	quirement:	s Specifica	tion Draft																						
Requirements Specification Final	11/9/2020	11/20/2020	2	0%													5	Requirer Specificati	ments ion Final																			
Design Review   Draft	10/19/2020	11/6/2020	3	100%											Design	Review I Dra	aft																					
Design Review   Final	11/9/2020	11/13/2020	1	0%													1	Design Review I Final																				
Technical Prototype Demos	11/9/2020	11/27/2020	3	0%													-		Prototype	Demos																		
Communication Strategy Memo	1/11/2021	1/22/2021	2	0%																		Commu	mication y Memo															
Software Design Document	1/11/2021	2/12/2021	5	0%																			Softwa	re Design I	Document													
UGRADS registration	2/15/2021	2/26/2021	2	0%																								RADS stration										
Design Review II	2/15/2021	2/26/2021	2	0%																							Design	Review II										
Full Prototype Tech Demo Milestone Spec.	3/1/2021	3/12/2021	2	0%																									Full Prote	otype Tech filestone								
Software Testing Plan	3/8/2021	4/2/2021	4	0%																											Software Te	sting Plan						
Design Review III	3/22/2021	4/2/2021	2	0%																												Design R	leview III					
Completed Team Website	4/5/2021	4/16/2021	2	0%																														Complete Webs	ed Team site			
Capstone Poster	4/5/2021	4/16/2021	2	0%																														Capstone	Poster			
Capstone Presentation	4/5/2021	4/26/2021	3	0%																														Capsto	ne Present	ation		
Final Product Acceptance Demos	4/19/2021	4/30/2021	2	0%																																Final Pr Acceptance	oduct e Demos	
Team Reflection Document	4/26/2021	5/7/2021	2	0%																																		effection ment
Final Project Delivery	5/3/2021	5/7/2021	1	0%																																		Final
	,																											W.										Project Delivery





### **PROBLEM**

Expensive and unscalable
commercial product for counting
people to measure the use of
areas of campus

### **SOLUTION**

**Cheap and scalable** solution catered towards the needs for NAU