



Sponsor



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Problem

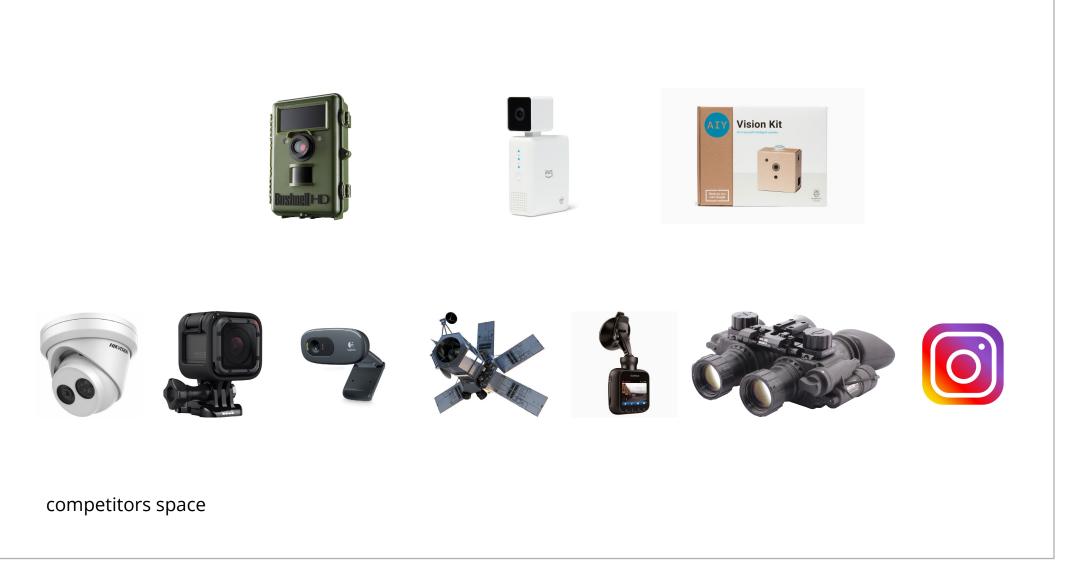
Earth is home to more than 10 million species, many of which are threatened by human activity and interferences causing extensive



habitat loss, the introduction of invasive species, pollution, human overpopulation, and overharvesting of natural resources. Current methods of research and management have large inefficiencies and have not yet integrated

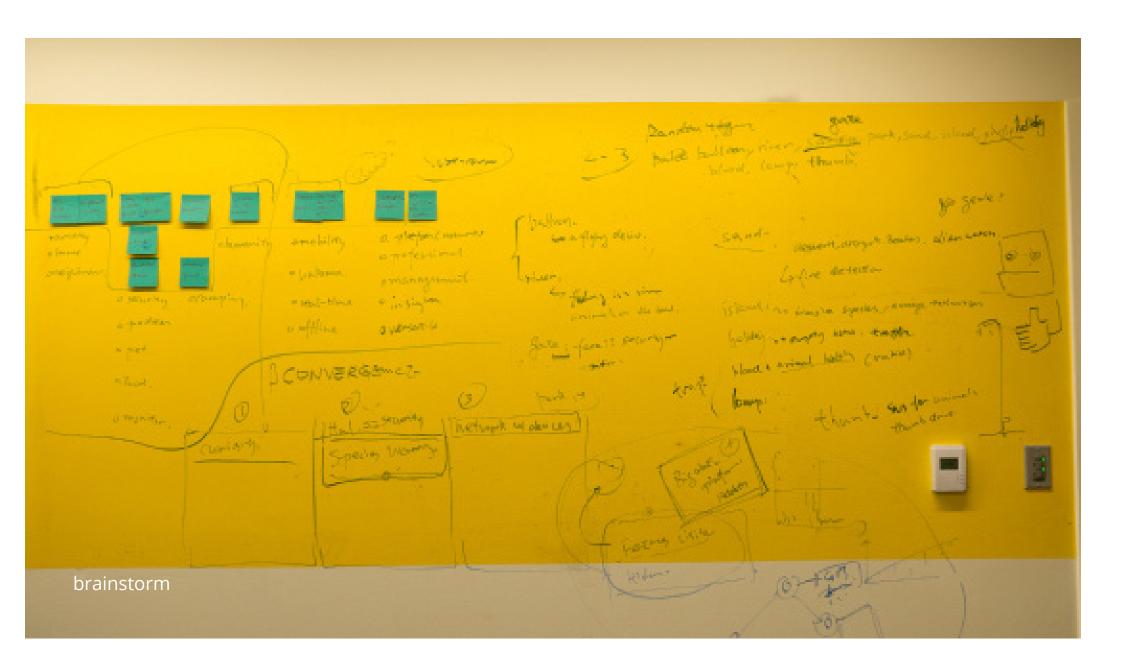
Approach

One of the most important tools used to study and protect wildlife is the camera trap, a device used to autonomously capture photos of animals in research studies around the world. Through our conversations with conservationists, ecologists, and wildlife researchers, we identified several specific use cases for machine learning on the edge that could augment their work by providing real-



1 Ti	nestamp	Please prc Age	Education Background	Gender	How much do What do y	ou es Do you l	ive Do you have any	кії Have y	ou If yes, what	de Does anything interesting related to animals happen in your backyard?	is there anything possibl	y For this que	How I In which outdoors act	avitie
2	7/26/2018 21:25:51	1 A25SORY 21 - 30	Bachelor	Male	6 10x	Yes	Dog	No		daily morning i playing with my dog	it is full of air on the back	ky Dolphin	5 Fishing	
3	7/26/2018 21:26:04	4 AL2K0EB(41 - 50	High school	Male	3 Equal	Yes	No	No		lots of birds and some cats from other neighbors	Why so many pigeons?	Dolphin	4 Hiking	
4	7/26/2018 21:26:20	AS1RGVF 31 - 40	Bachelor	Female	5 1000x	Yes	Dog, Cat	No		No	No	Dolphin	4 Hiking	
5		5 A2E3TO92 31 - 40	Bachelor	Male	4 1000x	Yes	No	No		No. The backyard leads to a thin patch of woods, and then another yard. It's not thick enough for any real wildlife diver	si No	Dolphin	0 None	
6		A1BBJJH(41 - 50	Bachelor	Male	6 Equal	Yes	Dog, Cat	No			No	Dolphin	6 Hiking, Camping, Fish	hin
							-			I have a small pond in my back yard and toads lay eggs in it every year.				min
7		2 AIYR9PFC 21 - 30	High school	Male	4 2x	Yes	Dog	No	no	yes	yes	Dolphin	5 Fishing	
в		7 A2KZVP4! 21 - 30	Bachelor	Male	5 100x	Yes	Dog	Yes	smart cctv c		once a snake bite my do		5 Camping	
9		6 A15XX0W 41 - 50	Bachelor	Female	6 10x	Yes	Dog, Cat	No		There are squirrels, raccoons, and opossums in my back yard. The squirrels are out playing during the day and the other			6 Hiking, Camping	
0	7/26/2018 21:29:35	5 A3ANJRM 21 - 30	Bachelor	Female	6 2x	Yes	Dog, rats	No		There are so many ant hills that if you stand on the backyard lawn you'll be swarmed by ants.	Why are there so many a	aı Dolphin	6 Hiking	
1	7/26/2018 21:29:50	A1D9FOX 31 - 40	Grad school or above	Male	5 1000x	Yes	No	No		no	no	Dolphin	5 Hiking, Fishing	
2	7/26/2018 21:30:20	ATR6RB1I 41 - 50	High school	Female	3 2x	Yes	Dog, Cat	No		yes	yes	Dolphin	4 None	
3	7/26/2018 21:30:32	2 A2OAZPR 21 - 30	Bachelor	Female	6 1000x	No	No	No		no	no	Dolphin	6 Fishing	
4	7/26/2018 21:30:43	3 A2R0YYU 21 - 30	Bachelor	Male	1 10x	Yes	Dog. Cat	No		I have been seeing a ton of cardinals for the first time ever this year ever since I put out a bird feeder.	Why cardinals only show		3 Hiking	
5	7/26/2018 21:31:00	A251CVG 21 - 30	Bachelor	Male	6 10x	Yes	Dog	Yes	nothing	dog	animals	Dolphin	5 Hiking	
6		A2J37FCF 31 - 40	Grad school or above	Female	5 1000x	Yes	Dog	No	nouning	One car died	Could not understand ho		6 Camping, Fishing	
7		3 A321YWM 21 - 30	Bachelor	Female	4 1000x	Yes	Cat	Yes	CCTV	Here are six animals you are likely to find exploring your backyard .				
_									CCTV		If you have no clue about		6 Hiking, Hunting, Fishi	
8		3 A250FES5 31 - 40	Grad school or above	Male	5 Equal	Yes	Cat	No		A wide variety of birds and animals pass through.	Nothing in particular	Dolphin	5 Hiking, Camping, Hur	ntir
9		2 A302YRPI 31 - 40	Grad school or above	Female	6 Equal	Yes	Dog, Cat	No		We have wild rabbits visit our yard every night and sometimes a possum	what kinds of animals ar		6 Hiking, Camping	
:0	7/26/2018 21:32:44	AZTYIBLL 41 - 50	Bachelor	Female	6 100x	Yes	Dog	No		I get wildlife in my backyard such as deer and bear.	Just about their living site	u Dolphin	6 Hiking	
1	7/26/2018 21:33:02	2 A25VNYKI 21 - 30	Bachelor	Male	6 100x	Yes	Dog	No	N. A	My pets playing at backyard with neighbors pet	No	Dolphin	6 Hiking, Camping, Fish	hin
2	7/26/2018 21:33:02	2 A2V84QV221 - 30	High school	Female	4 10x	Yes	Dog	Yes	LG	DOG	MANGO	Dolphin	4 Fishing	
13	7/26/2018 21:33:38	A39EH922 21 - 30	High school	Female	6 100x	Yes	Dog, Cat	No		I live in the middle of a national forest. There are hawks, snakes, rabbits, mountain lions, bob cats, and random neighb	o Maybe more about the b	u Dolphin	6 Hiking, Camping, Fish	hir
4	7/26/2018 21:33:43	3 AWAW665 31 - 40	High school	Female	3 1000x	Yes	Dog	No	n/a	nothing really except stray cats roaming around	no	Dolphin	2 Fishing	
5		A2IDNLHE 51 - 60	Bachelor	Female	5 10x	Yes	Dog, Cat, turtle	No	n/a	We do have strays that frequently wander into our yard, as well as rabbits. They typically might wander in and stay for	= No	Dolphin	4 walking in my neighbo	or
16		A2IWEG5I 31 - 40	High school	Female	5 100x	Yes	Dog, Cat, fish	No	104	We have seen a lot of squirrels, snakes, bugs, snails. We have a birdhouse that a family of birds live. We have even his			6 Camping, Hunting, Fi	
7		5 A36KX5DI 21 - 30	Bachelor	Male	6 100x				Motorola Sc					
_			Buenelei	intere		Yes	Dog	Yes			no	Dolphin	6 Hiking, Camping, Fish	nir
8		5 A3CBOZU 31 - 40	Bachelor	Male	6 10x	Yes	Dog, Cat	Yes	CCTV	no	playing pets	Dolphin	5 Hunting, Fishing	
9		7 A3FPX5HI 21 - 30	Bachelor	Male	4 10x	Yes	Dog	Yes	cctv	yes	few other dogs coming to	o Dolphin	5 Camping	
0	7/26/2018 21:37:51	1 A3I1ZTAZ 31 - 40	Bachelor	Male	6 10x	Yes	Dog, Cat	Yes	Motion actio	I see dear come threw all the time	Not really	Dolphin	6 Hiking, Camping, Fish	hin
11	7/26/2018 21:37:58	3 A8KX1HFI 51 - 60	Grad school or above	Male	6 10x	Yes	Dog, Cat	No	I have not u	se We get occasional visits from skunk, deer and turtles in our backyard.	I would like to observe se	o Dolphin	6 Hiking	
12	7/26/2018 21:38:58	3 A2Y749J0 31 - 40	Bachelor	Male	6 2x	Yes	Dog	Yes	A security ca	an Nothing other than my dogs barking and running around	no	Dolphin	6 Hiking, Fishing	
13	7/26/2018 21:40:13	3 A2IPO6UJ 21 - 30	Bachelor	Male	5 10x	Yes	Dog, Cat	Yes	The activity	wi The diversity in the animal kingdom is not completely unveiled to the universe. However, the researchers try to find all	th I try to surround myself v	vi Dolphin	6 Hiking, Camping, Fish	hir
14	7/26/2018 21:40:41	AKA81MP 31 - 40	Bachelor	Female	6 10x	No	No	No		Fishing	No	Dolphin	4 Fishing	
15	7/26/2018 21:40:59	A2UYZFH 21 - 30	High school	Male	5 2x	Yes	No	No		There is a German shepherd next door that I have wanted to pet.	no	Dolphin	5 Camping, Fishing	
16		A1GYW4N 41 - 50	Grad school or above	Female	5 10x	Yes	Cat	No		We have tons of birds and squirrels come to visit and snack on seeds from our bird feeder. We also have a mallard pai		Dolphin	5 Hiking, Camping	
7		A14ADQ7 Above 60		Male	6 100x	Yes	No	No			Not really	Dolphin	5 Hiking, Camping, Fish	In Le
_										My "backyard" is not fenced and rural and wooded. I see deer, coyotes, rabbits, and a variety of birds frequently.				
18		0 A1RROEL 31 - 40	Bachelor	Male	6 1000x	Yes	Dog, Cat, rabbit	No		pig, precook,	yes	Dolphin	6 Camping, Fishing	
19	7/26/2018 21:42:15	5 A1TCY2M 51 - 60	Grad school or above	Female	6 100x	Yes	Cat, ducks and ch	nic No		I have a wetland that attracts lots of birds - small birds, birds of prey, and water birds. Also, we have coyotes, deer, and	Pretty much everything.	L Dolphin	6 Hiking, Camping, Fish	
0	7/26/2018 21:42:43	3 A1NGUY5 51 - 60	Bachelor	Female	5 2x	Yes	Dog, Cat	No		Dog plays, bird sings.	No.	Dolphin	6 Hiking, Camping, Fish	hir
1	7/26/2018 21:42:50	A352XH6121 - 30	Others	Male	5 100x	Yes	Dog	No		Some birds fly through and rabbits hop by. Occasional squirrels will crawl along the fence.	No, not really.	Dolphin	4 Fishing	
2	7/26/2018 21:44:21	1 A33KTU8ł 41 - 50	Grad school or above	Male	5 100x	Yes	Dog	No	NA	squirrel comes regularly there. I like watching them.	No	Dolphin	6 Camping	
3	7/26/2018 21:45:14	4 A1H9L9AF 21 - 30	Bachelor	Male	6 10x	Yes	Dog	No		No	No	Dolphin	6 Hiking, Camping, Hur	ntir
4	7/26/2018 21:45:24	A3TN3GQ 41 - 50	Bachelor	Male	5 1000x	Yes	Cat	Yes	watch the ca	ats possums and raccoons eat cat's food	possums and raccoons e	e: Dolphin	5 Hiking	
5		2 A3JRWXR 31 - 40	High school	Female	6 10x	Yes	Cat	Yes	trail cam	yes all the time	No	Dolphin	6 Hiking, Camping	
6		2 A1XIIHV1(31 - 40	Grad school or above	Female	6 10x	No	Dog, Cat	No	ourr	No backyard, my pets are with me, an individual pet room.	I really don't have an bac		5 Camping, Hunting	
7		2 A2ZPSPA(31 - 40	Grad school or above	Male	4 100x	Yes	Cat	No		I have noticed that birds tend to drop dead mice into my backyard.	I would like to know why		4 Hiking, Camping, Mou	
8		APF1EAZ 21 - 30	Bachelor	Male	4 100x						I would like to know why			un
0						Yes	Dog, Cat	No		yes, my dog goes out there to bark and use the bathroom		Dolphin	4 Hiking, Hunting	
9		7 AYQH26R 31 - 40	Bachelor	Female	5 100x	Yes	Dog	No		We have herds of deer come through regularly	I don't think so.	Dolphin	6 Hiking, Camping	
0		ARLK61Z5 21 - 30	Bachelor	Male	6 100x	No	Dog, Cat	Yes	webcamera	yes snakes, pigs etc	yes	Dolphin	6 Hunting, Fishing	
1		7 A5YRC4Q 41 - 50	Grad school or above	Male	4 Equal	Yes	No	No		Squirrels, mice, and birds live and feed among my trees, bushes, and shrubs. Cats use my backyard as their litter box	. Why my backyard attrac		5 Running and bicycling	g
2	7/26/2018 21:52:30	A1U6A617 31 - 40	Bachelor	Female	6 1000x	Yes	Dog, Cat, goats a	nc No		deer, raccoons, black bears, mountain lions, wild turkeys, skunks, and more have all come through	Not that I can recall	Dolphin	6 Hiking	
i3		7 A2NKWQE 31 - 40	Bachelor	Female	6 10x	Yes	Dog, Cat	No		My dogs get sprayed by skunks pretty regularly.	My chickens get eaten b	y Dolphin	6 Hiking, Camping, Hur	nti
i4	7/26 5018 21 1/26	ev data	Bachelor	Male	5 10x	Yes	Dog, Cat	No		I usually find a few mongoose and snakes roaming around the backyard. Sometimes they confront each other and mai		Dolphin	6 Camping, Fishing	
5		A2DHFZA 51 - 60	High school	Male	6 10x	Yes	Dog	Yes	We have au	to We do get our share of rabbits, squirrels, cats and the occasional frog	Not that I know of	Dolphin	6 Hiking, Camping	
6		A2DHP2A 51 - 60	Bachelor	Male	4 10x	Yes	No	No	the nave au	Someone in our neighborhood has a cat they let outdoors in a neighborhood bordering a large tract of open space, v			6 Hiking	
											wi Our backyard itself is fail		5	
1		A3LJLOLS 31 - 40	High school	Female	5 100x	Yes	Dog	No		No	NO	Dolphin	6 Hiking, Camping, Hur	
8		A392P1JC 51 - 60	Bachelor	Male	6 2x	Yes	Dog	No		Squirrels and possums have sex. My dogs like to chase the ducks. The lizards hunt insects. Our neighborhood snak			6 Just by going outside	F.
	7/26/2018 21-57-04	4 A3BP890C 51 - 60	Bachelor	Female	6 100x	Yes	Dog	Yes	security sys	ter deer squirrels, bear, covote	whats the best way for u	c Dolphin	6 Camping, Fishing	



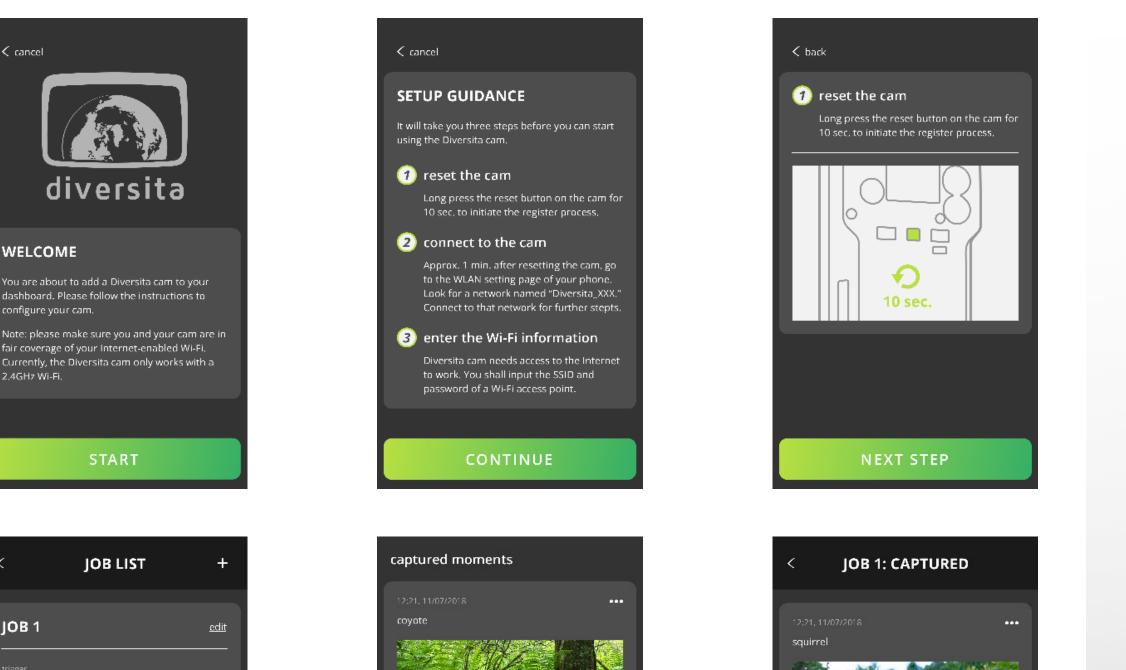


time insight.

Solution

Diversita cam is a camera trap that integrates Machine Learning on the Edge, connectivity, and cloud services to allow a real-time window into the lives of animals.

The Diversita camera can tell if captured image have animal in the frame with onboard computing power. It will send qualified images





to Azure via Wi-Fi/4G. The ML model from

Microsoft can classify images of over 5,000

species. Enabling efficient, near-real time

options for conservation research.

