WEEK4

Sep 15

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HYPOTHESES

1. Add event amount constraint. If there are less than N events for certain capability of certain device, no hypothesis will be generated.

2. Hypothesis test: add initial event for each cap-device pair. If current target event happens before initial event, tag it as invalid.

Constrains	Original	Event amount > 10	Correlation match > 7
e2e	565	179	49
e2s		503	139

E2E - MOTIONSENSOR

Multipurpose Sensor is on bathroom door; 1 means open, 0 means closed.
Line 27: When bathroom door is open, no motion should be detected by Motino sensor bedroom.

Line 28: If bathroom door is closed, no motion shoule be detected by Motion sensor living room.

Question~~: Should I remove Multipurpose Sensor on bathroom door?~~

1. *1->0 && 1->1 : remove current correlation*
2. *Increase Threshold if devices are in different rooms.*
3. *29 : e2e 30 : e2es*

27	Multipurpose Sensor	contactSensor	1->0	Motion Sensor Bedroom	motionSensor	61	3	67	0.95522388	3
28	Multipurpose Sensor	contactSensor	0->0	Motion Sensor Living Roo	motionSensor	15	44	62	0.9516129	3
29	Multipurpose Sensor	contactSensor	1->0	Zooz Bedroom	motionSensor	62	2	67	0.95522388	3
30	Multipurpose Sensor	contactSensor	1->1	Zooz Bedroom	motionSensor	33	32	67	0.97014925	2
31	Multipurpose Sensor	contactSensor	1->1	Zooz Bathroom	motionSensor	62	2	67	0.95522388	3
32	Multipurpose Sensor	contactSensor	1->0	Zooz Bathroom	motionSensor	53	13	67	0.98507463	1

E2E - ACCELERATION

Question: Is line 0 e2e or e2s? Should accelerationSensor count?
Line 0 & 1

	dev_l	cap_l	pattern	dev_r	cap_r	hit	histon	total	rate	alarms
0	Motion Sensor Bedroom D	motionSensor	1->0	Multi Front Door	accelerationSensor	16	860	1686	0.99658703	3
1	Motion Sensor Bedroom D	motionSensor	0->0	Multi Front Door	accelerationSensor	11	904	1737	0.99564744	4
2	Motion Sensor Bedroom D	motionSensor	1->0	Multipurpose Sensor	accelerationSensor	79	777	1686	0.98617512	12
3	Motion Sensor Bedroom D	motionSensor	0->0	Multipurpose Sensor	accelerationSensor	45	850	1737	0.98459846	14
4	Motion Sensor Living Roor	motionSensor	0->0	Multi Front Door	accelerationSensor	10	430	562	0.99547511	2
5	Motion Sensor Living Roor	motionSensor	1->0	Multi Front Door	accelerationSensor	14	408	535	0.99294118	3
6	Motion Sensor Living Roor	motionSensor	0->0	Multipurpose Sensor	accelerationSensor	17	412	562	0.98169336	8
7	Motion Sensor Living Roor	motionSensor	1->0	Multipurpose Sensor	accelerationSensor	20	393	535	0.98099762	8
8	Zooz Bedroom	motionSensor	0->0	Multipurpose Sensor	accelerationSensor	60	829	983	0.98668147	12
9	Zooz Bedroom	motionSensor	1->0	Multipurpose Sensor	accelerationSensor	83	781	950	0.98969072	9
10	Zooz Bathroom	motionSensor	1->0	Multipurpose Sensor	accelerationSensor	65	169	248	0.99152542	2
11	Zooz Bathroom	motionSensor	0->0	Multipurpose Sensor	accelerationSensor	65	155	236	0.98214286	4

TEST 1

Root cause: Illuminance sensor is blocked.

Observation: None.

Alarm: correlation violated.

Affected correlation:

	Capability	Device	Value
Anterior	switch	Bathroom mid	1
Posterior	Illuminance	Zoon 4-in-1 sensor	1

5.1. task 2.1

Read 5

power meter

Smart plug

TEST 2

Root cause: motion sensor is blocked.

Observation: User walks in without light on.

Alarm: None.

Affected correlation :

	Capability	Device	Value
Anterior	Motion detected	Motion Sensor Living Room	1
Posterior	Switch	Doorway light	1

Heater on => temeparture increase

FEEDBACK

1. **1->0 && 1->1:**

   How to process the correlations if an anterior has two posteriors with same cap-device but opposite value.

31	Multipurpose Sensor	contactSensor	1->1	Zooz Bathroom	motionSensor
32	Multipurpose Sensor	contactSensor	1->0	Zooz Bathroom	motionSensor

2. **e2e | e2es:**

   Some e2s are generated from e2e. Is it necessary to distinguish these e2s from the original e2s as e2es?

3. **Threshold :**

   *Currently, we use **95%** to test e2e and e2s correlation hypotheses. Should we increase the threshold if devices are in different rooms?*

4. **Devices needed for experiments**

   More devices might be needed in the experiments. For example, power meter for smart plugs.