

Operator Aware

Mitchell Krawiec-Thayer

github.com/mitchellpkt/operatoraware



Content Warning:
Audio & text from 911 calls

Abusive 911 dispatchers ignore emergencies

Caller: I'm doing **CPR** as we speak. I'm keeping him alive.

Operator: Okay, is he not **breathing**?

Caller: Barely. Stay with him. *[inaudible]* ... Just stay with me...

Operator: ... You could deal with it yourself.

... I'm not gonna deal with this, okay?

Caller: No, my friend is **dying** —

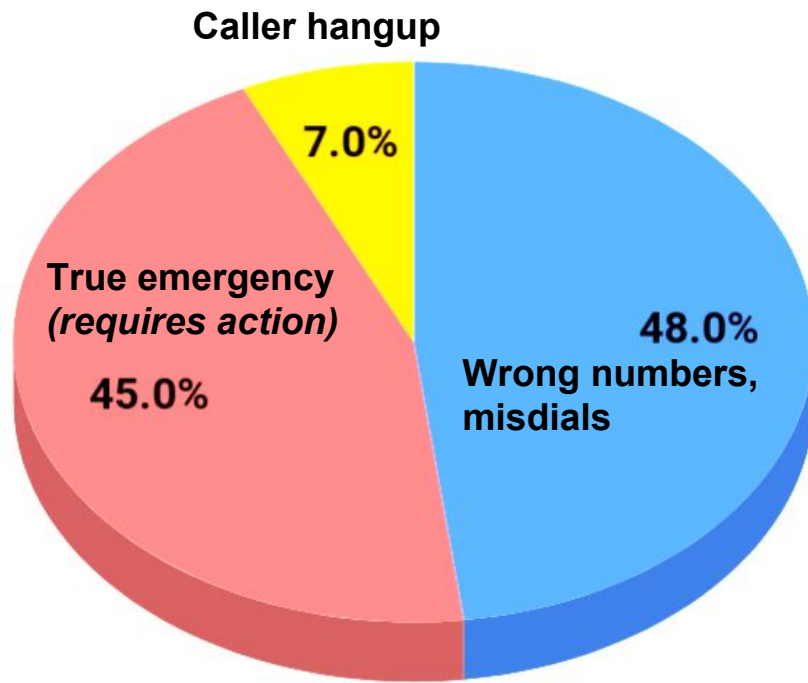
OPERATOR TERMINATED CALL

Jaydon Chavez-Silver died.

- Typically **long-term behavior** uncovered only **after** an avoidable death.
- How can a supervisor miss this systemic failure for years?

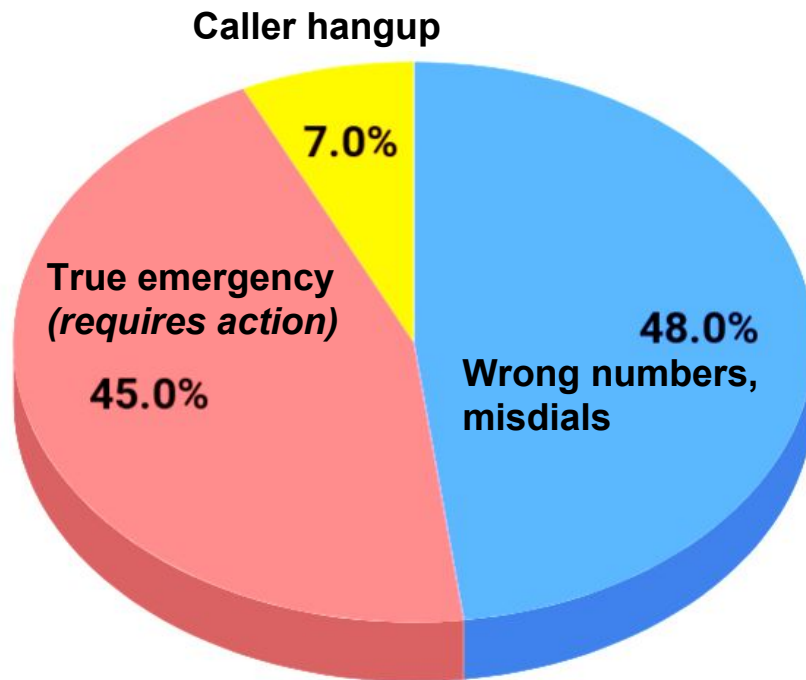
Quality assurance becomes overwhelming at scale

Single 911 call center
~40,000 calls per day



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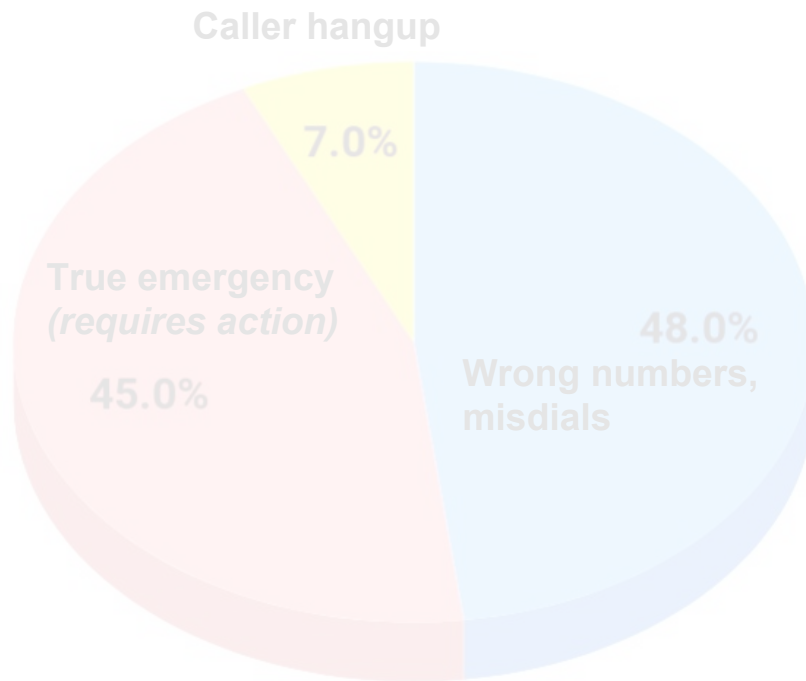


> 20,000 calls with no action taken, daily.

This set may contain a few mishandled calls with real emergencies and no action.

Quality assurance becomes overwhelming at scale

Single 911 call center
~40,000 calls per day



> 20,000 calls with no action taken, daily.

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**300+ hours of audio from calls
with no subsequent action**



**30 sec call with
real emergency**

**Call center
supervisor**

Quality assurance becomes overwhelming at scale







**Showing 1 - 9
of 20,000**

<u>Operator ID #</u>	<u>Call Duration</u>
276	0:25
276	2:19
276	0:11
314	0:51
314	1:53
314	0:35
314	1:20
314	0:45
774	1:13
774	0:12

Operator Aware augments the supervisor interface



Showing 1 - 9 of 20,000			
<u>OperatorAware</u> <u>keywords</u>	<u>OperatorAware</u> <u>recommendation</u>	<u>Operator</u> <u>ID #</u>	<u>Call</u> <u>Duration</u>
(none detected)	REVIEW CALL	276	0:25
(none detected)	REVIEW CALL	276	2:19
(none detected)	REVIEW CALL	276	0:11
fire, burn, help 	REVIEW CALL	314	0:51
dying, bleed, CPR 	REVIEW CALL	314	1:53
(none detected)	REVIEW CALL	314	0:35
stroke, unconscious 	REVIEW CALL	314	1:20
knife, argument 	REVIEW CALL	314	0:45
(none detected)	REVIEW CALL	774	1:13
"wrong number"	REVIEW CALL	774	0:12

Training phase:

Labeled training data

(fire emergency)

(weapon)

(weapon)

...

Training phase:

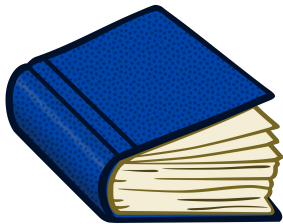
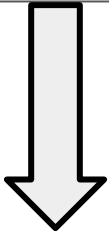
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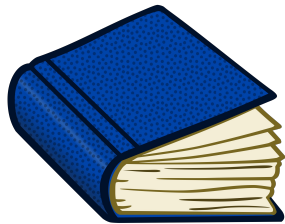
...



specialized
dictionary

*e.g. {burn, flame, fire,
arson, ...} indicate
likely fire emergency*

Training phase:



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Evaluation phase:

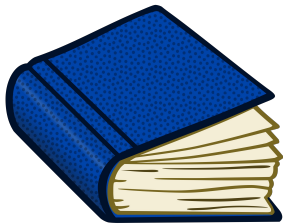
Caller



Operator



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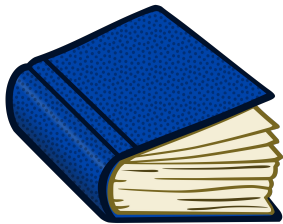


Operator



1) Transcription

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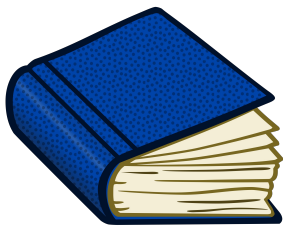
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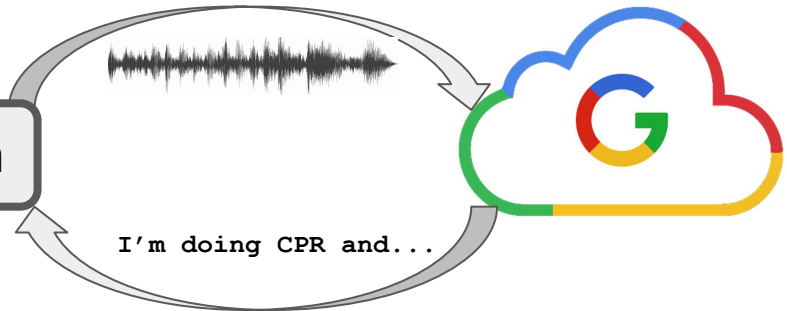
Caller



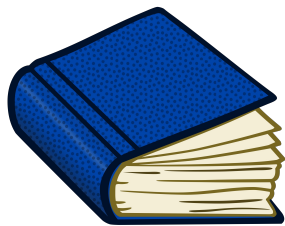
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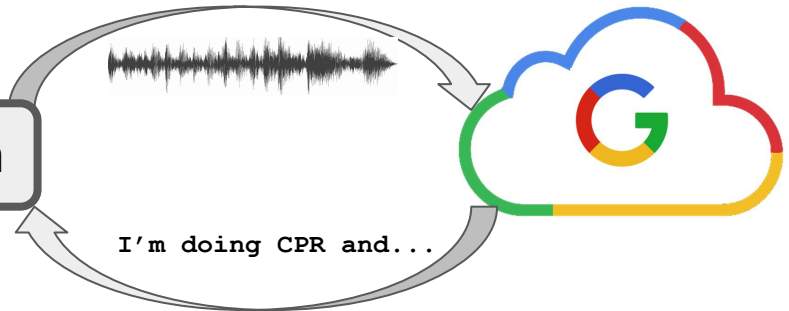
Caller



Operator



1) Transcription



2) Feature match

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Evaluation phase:

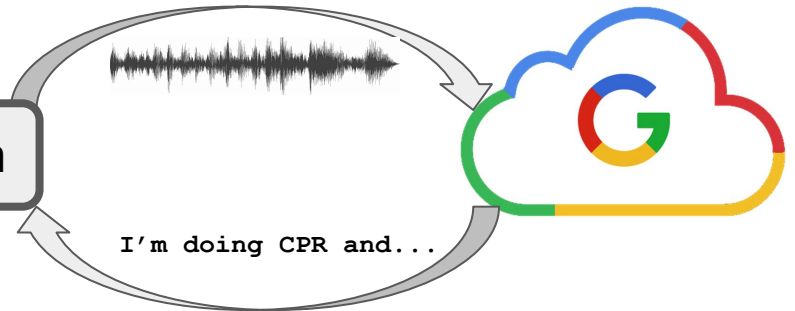
Caller



Operator



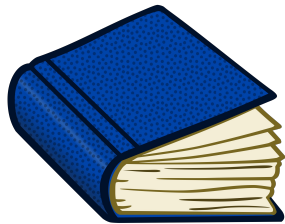
1) Transcription



2) Feature match

3) Classification /
decision engine

Training phase:



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Evaluation phase:

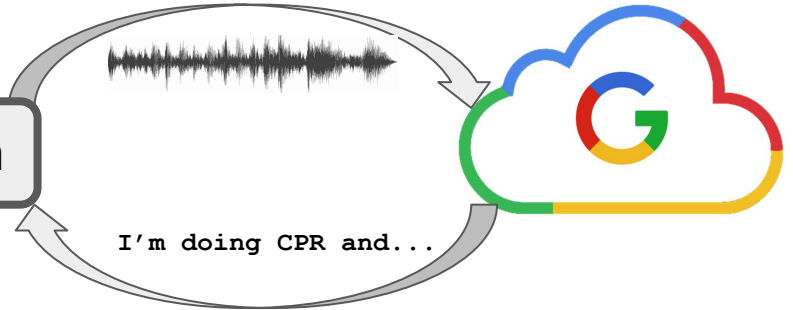
Caller



Operator



1) Transcription



2) Feature match

3) Classification /
decision engine

4) Actionable output

**Supervisor
dashboard
highlights**

**interactions that
warrant review**

29953	Police dispatched	5:02	Disp.	knife, argument	
6732				(none detected)	
422	Ambulance sent			fire, burn, help	
788				dying, bleed, CPR	REVIEW CALL
29952				(none detected)	
67325	Ambulance sent	1:06	Call	stroke, unconscious	
15578	None	1:24	Disp.	(none detected)	



**Uncaged
Potential**



THE UNIVERSITY
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WISCONSIN
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Chemistry Ph.D. 2018

Chemistry M.S. 2014



OHIO NORTHERN UNIVERSITY
Mathematics, Physics,
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