Tracking the User Experience

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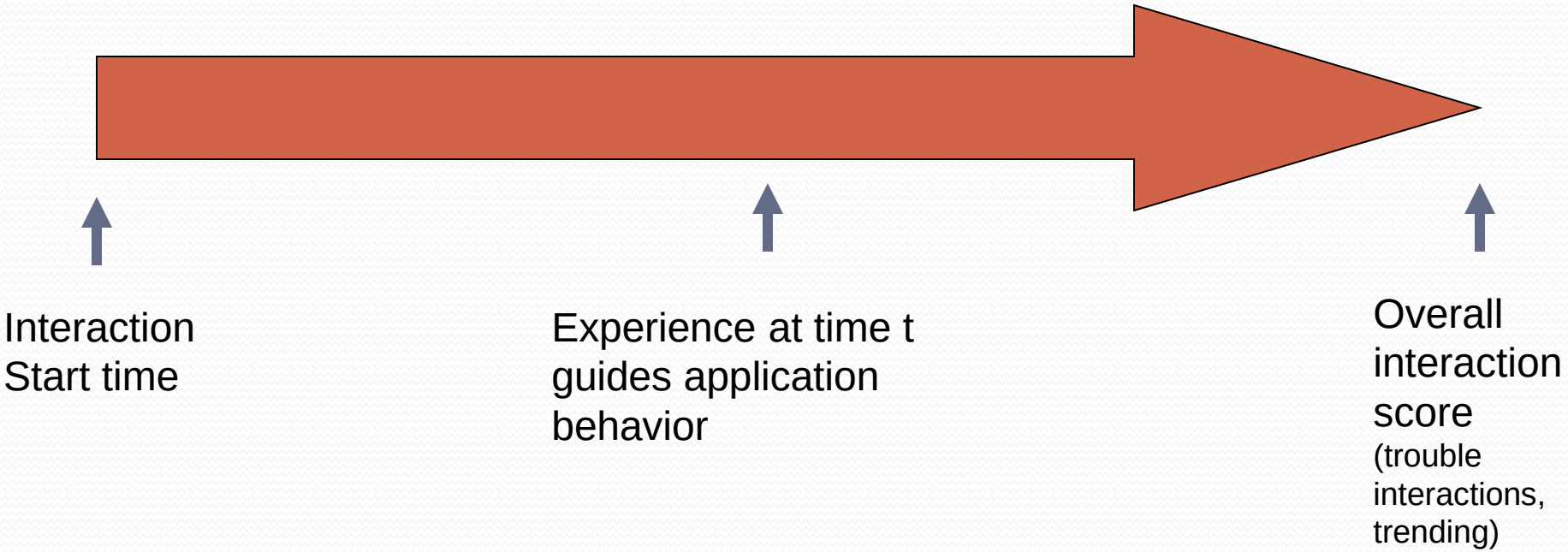
Overview

- Background
- User Experience Metric
- Results
- Conclusions

Common challenges in commercial speech systems

- No history of previous events during an interaction
- Error handling is based on local information
- System performance not known before go-live
- Required Client ability to control caller satisfaction versus automation trade-off

Introducing a new metric with two purposes



1. Use metric to aid the interaction manager decision making
2. Automatically assign a user satisfaction score at interaction end

User experience metric

At each dialog turn a user experience metric is calculated

Past errors, setbacks are weighted by a discounting variable

Different event types:

- NoMatch
- Disconfirmation
- NoInput
- Successful recognition event
- Agent requests

If pre-defined threshold is met, the application switches user treatment

Metric as part of interaction management

Metric tracks experience of user as interaction progresses

A metric represent caller's state of mind to aid interaction manager decision making

Future work: use to influence other interaction manager decision as to slow down prompt speed, change prompting style and more

Parameter Estimation

Define desired experience in terms of event sequences, both good and bad.

- Event sequences leading to a treatment change:
  - metric should be above threshold after 1 disconfirmation, 1 agent request and 1 rejection error.

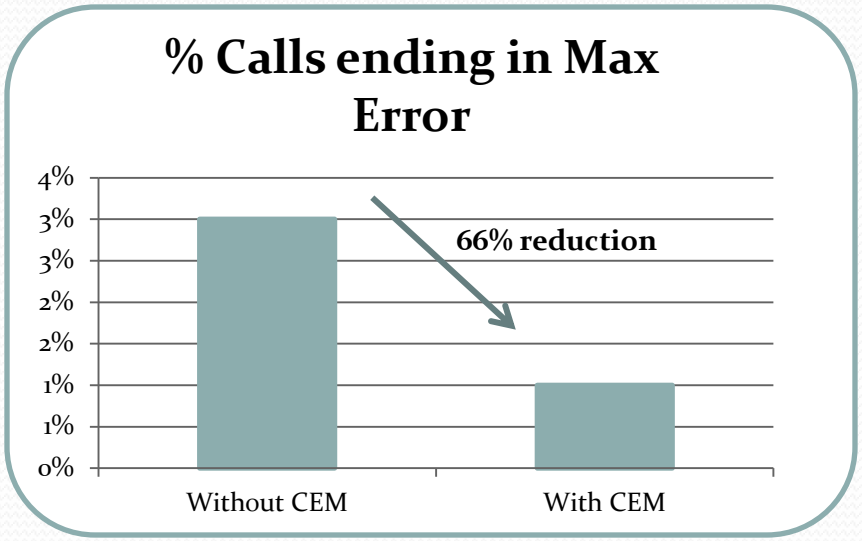
- Event sequences NOT leading to a treatment change:
  - metric should stay below threshold for: 1 timeout, 1 successful turn, 1 rejection and 1 agent request.

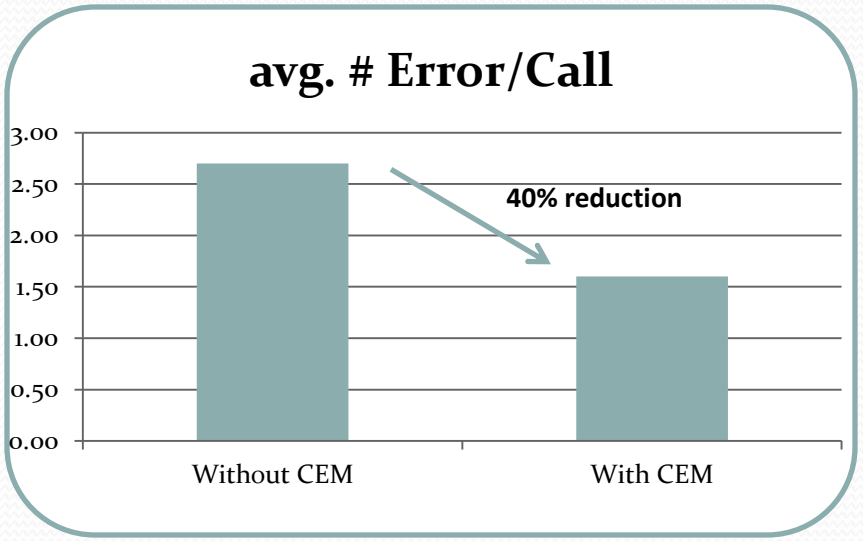
Parameters can be estimated via an equation system

Correlation between human ratings and automated scores

Cohen's κ	% Agreement between human and machine	% total agreement (up to a difference of 1) between human and machine
0.733	76.6	93.3

Implementation Example 1





Significant reduction in error frequency

Increased caller satisfaction

Decreased cost:

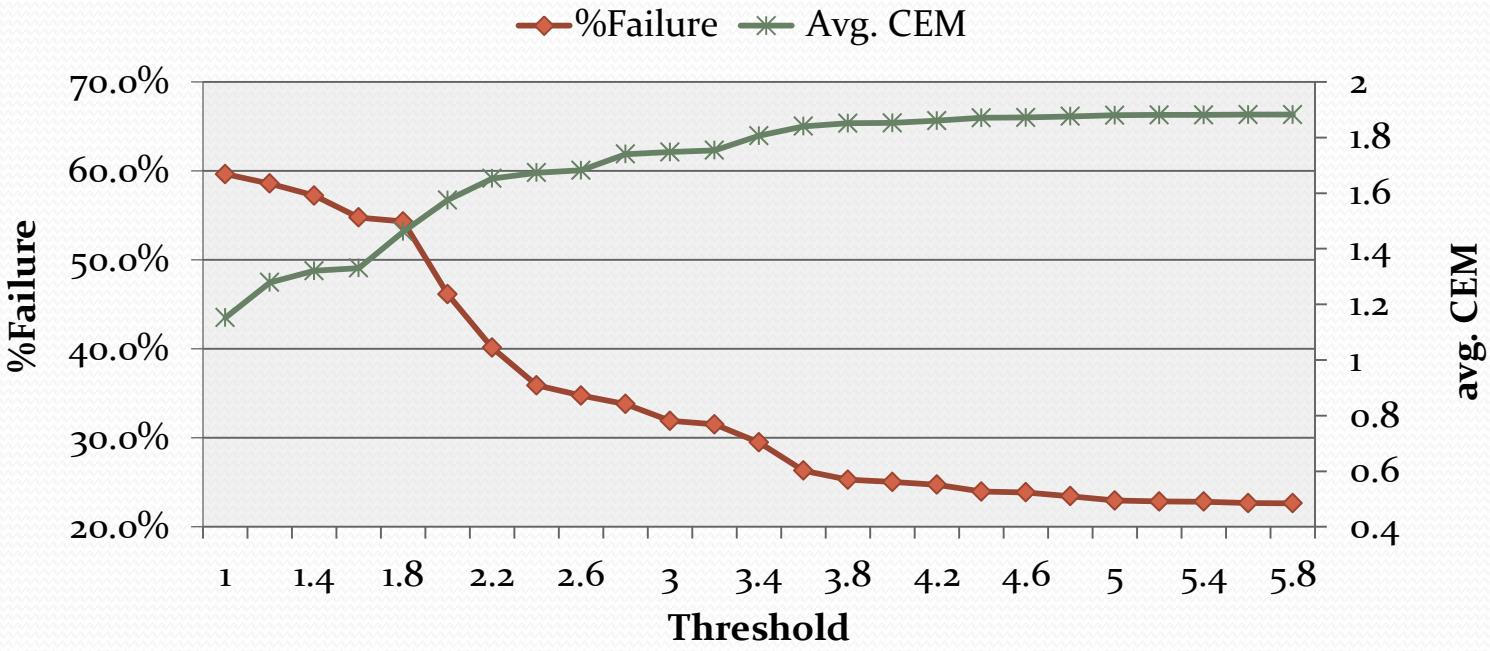
- Each saved transfer saves $0.75, for an application with 6 million calls a year that's a saving of about $100,000.

Example 2: Impact on automation rates

Application	Success rate of initial release	Success rate after parameter adjustment	relative improvement
A	57.4%	63.9%	11.3%
B	5.7%	8.2%	44.4%
C	10.1%	13.4%	32.6%

Significant automation improvement by changing parameter values

Example 3: Trade-off between caller satisfaction and automation



- High caller satisfaction = low average score at call end
- High automation = a minimum number of failed calls

Summary

Metric describes experience up to current moment in time

Parameters are configurable at run-time.

Can be used to automatically score all calls

Using metric to aid interaction management has been shown to improve the automation in a live system.

Q & A

Thank you!

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