



STRESS MANAGEMENT

BRIAN MCKEAN

BIOTRAK
HEALTH

DIGITAL THERAPEUTICS FOR PAIN & STRESS
MANAGEMENT



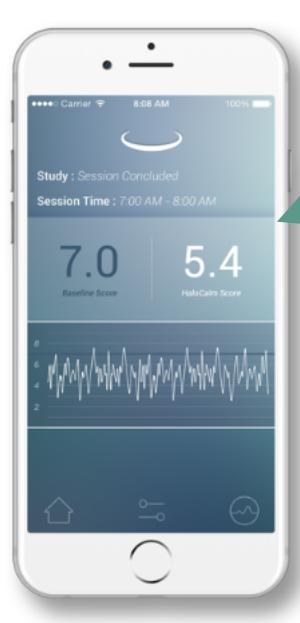
NEWS & PRESS

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<https://www.bitrakhealth.com/>

ARCHITECTURE



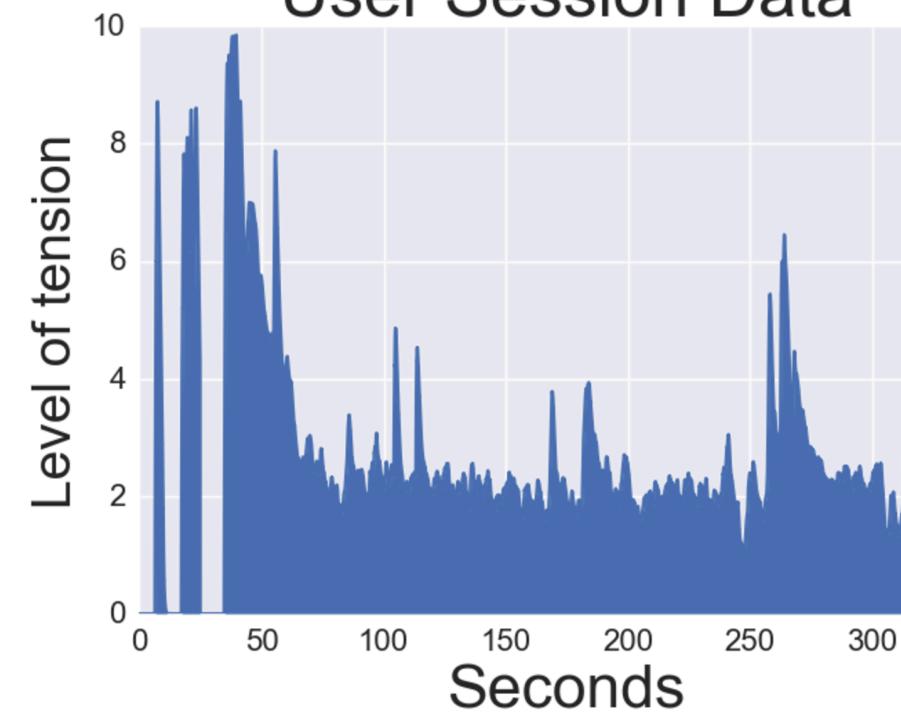
PROJECT OBJECTIVES

- Friend and Family Trial Started
- Monitor Sessions Done by Trial Users
- Develop Automated Reporting on Effective Use

Identify Bad Sessions

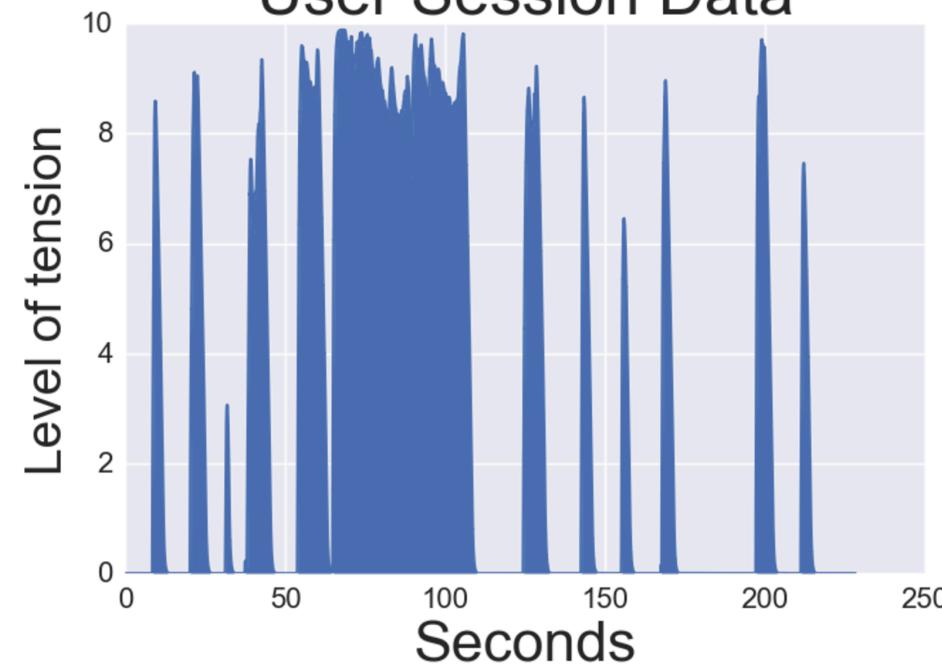
DATA

User Session Data



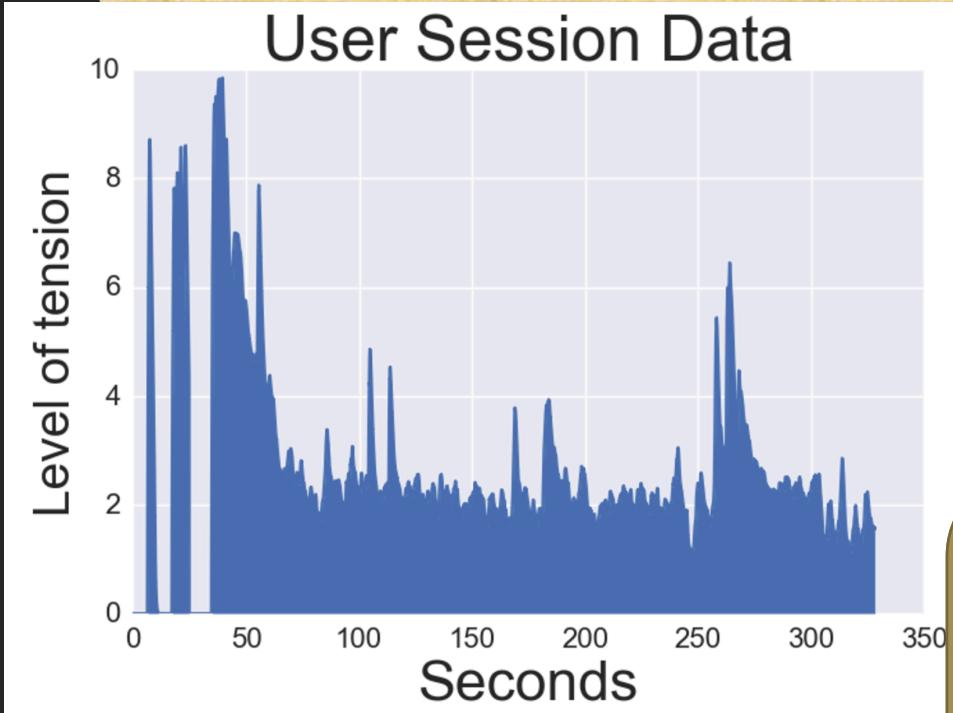
Effective Session

User Session Data



Session with problems

MODEL - FEATURES



Length of time series
Average Frequency
Largest movement

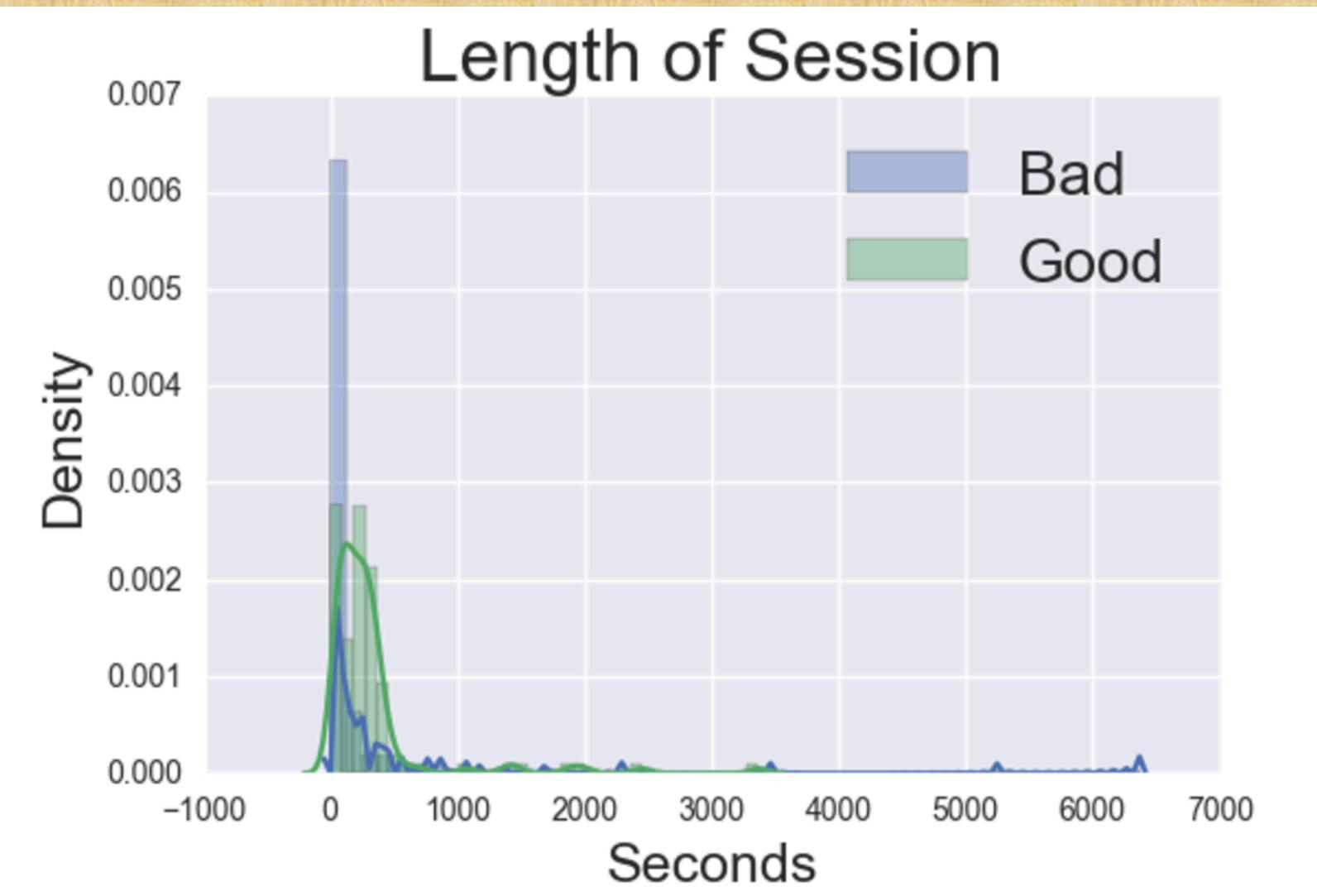
356 Sessions
“Good” : 119
“Bad”: 237

Min
Max
Mean
Standard Deviation

Heuristics for good sessions:

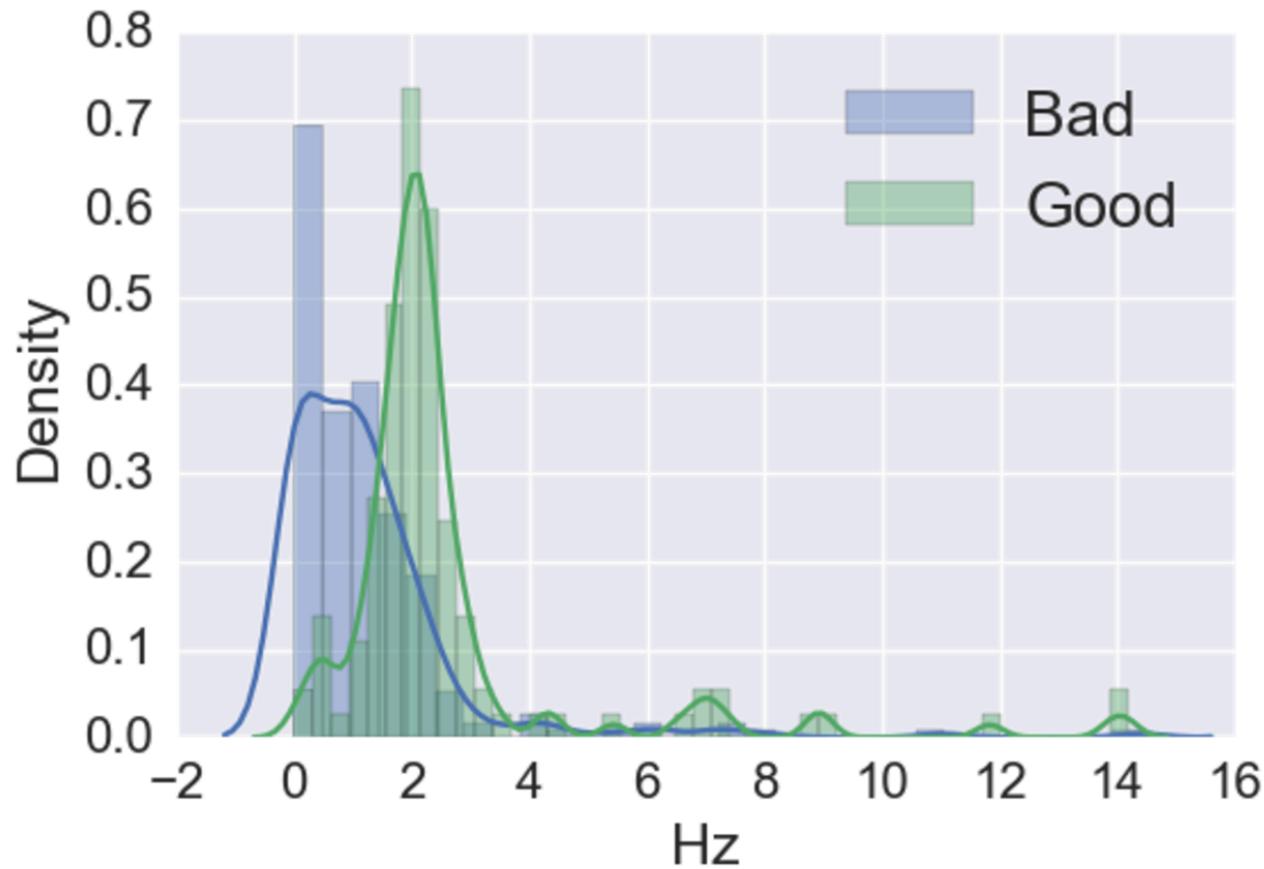
- At least 60 seconds
- No drop to 0 after 60 seconds
- No rise to 4095 after 60

MODEL- FEATURE INFLUENCE



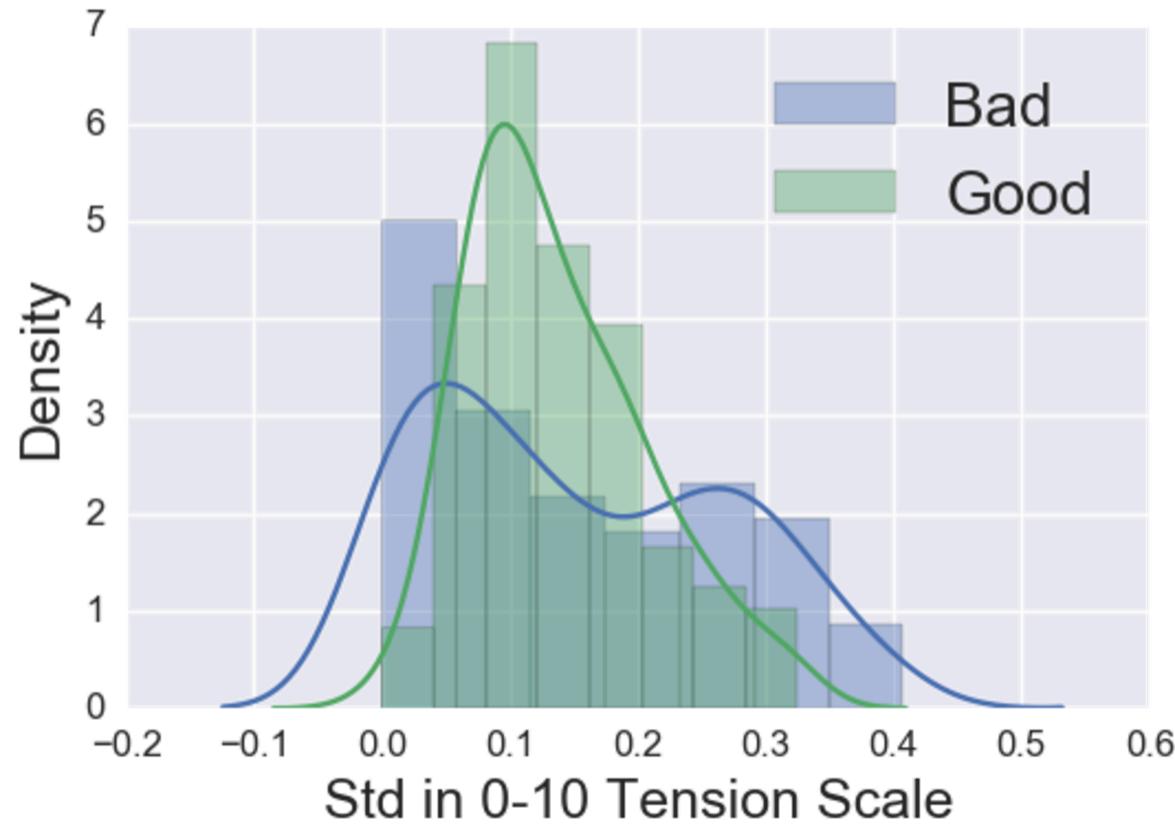
MODEL- FEATURE INFLUENCE

Average Frequency in Tension Measurement



MODEL- FEATURE INFLUENCE

Standard Deviation in Tension Measurement



MODEL- FEATURE INFLUENCE



MODEL EXPLORATION - ACCURACY

- Random Forest: 0.89*
- Adaboost: 0.86
- Gradient Boosting: 0.89
- Stacked
 - Random Forest -> Gradient Boost: 0.92
 - Random Forest -> Adaboost: 0.89

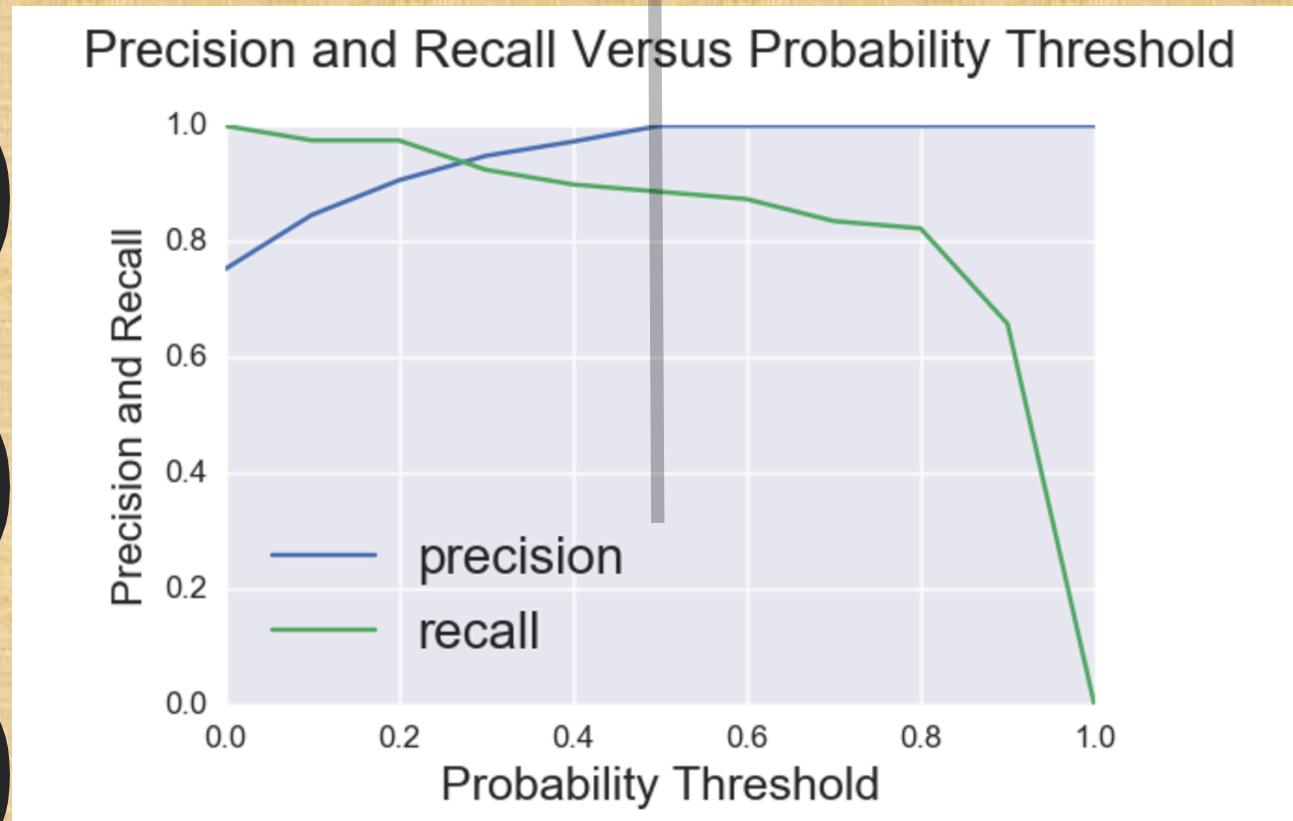
* Random Forest Deployed

RESULTS

At 0.5 probability Threshold

Precision = 100% of found are bad

Recall = 94% of bad sessions are ID'ed



RESULTS - MODEL DEPLOYMENT



FUTURE WORK

- Classification of problems
 - Differentiate between:
 - user ‘play’
 - user error
 - platform issue
- Trend analysis
 - Problems versus time
 - Problems per user
- Web APP

QUESTIONS?

- Stress Management

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https://github.com/bdmckean/Stress_Management



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