UNCOVERING HIDDEN DATA IN AUDIO TO AUTOMATE AD DETECTION FOR VOD
AGENDA

- Define VOD and DAI
- Problem Definition
- Solution Requirements
- Final Product Results
- Challenges Encountered
- Matlab Tools
- Product Demo
- Conclusion
VOD AND DAI

- **Video on Demand**
  - Viewers choose their own content
  - Can be viewed on a variety of devices

- **Dynamic Ad Insertion**
  - Advanced advertising opportunities
  - Advertisers target ads that can be swapped in/out
PROBLEM DEFINITION

- Manual identification of content
  - Time consuming & inaccurate
  - Requires large staff and high cost
- Existing solutions
  - Low accuracy rate (~80%)
  - CPU intensive
  - Slow
SOLUTION REQUIREMENTS

- **Accuracy**
  - 95% transitions detection

- **Error detection/correction**

- **Real-time & batch**

- **Speed**
  - 60 minutes < 60 seconds

- **Supportable & Scalable**

- **Utilize MATLAB**
PRODUCT (MEDIA DETECTIVE)

- Tested and verified across all genres at 99.8% accuracy
- Supports Windows and Linux
- Process 3 hour show in 12 seconds
- 12 months R&D, 3 months of Build, 2 months of QA and 1 month to create Production version

- The Easy Way
CHALLENGES ENCOUNTERED

- **Gather large test dataset**
  - 500+ hours of content

- **Measure success**
  - Manual tagging of Ad break points
  - Statistical success/failure reporting

- **Poor quality of content**
  - Filtering and rules
MATLAB & TOOLBOXES

- MATLAB 2017b
- Audio System (real-time)
- DSP System (real-time)
- Signal Processing (real-time)
- Wavelet (real-time)
- MATLAB Coder & Compiler (real-time/batch)
- Parallel Computing (batch)
- Statistics and Machine Learning (test harness only)
TIME STAMP VISUALIZATION TOOL
TIME STAMP VISUALIZATION TOOL
TIME STAMP VISUALIZATION TOOL
DEMONSTRATION VIDEO - VISUALIZATION
CONCLUSION

- Processes all Genres
- Accuracy > 99.8%
- 60 minutes in under 5 seconds
- Runs local or in the cloud
- Process Jobs in parallel
- MATLAB and Java