TriPhonic: A new way to experience music
Spatialized audio with head tracking on a mobile device

What is TriPhonic?
- Advances in technology have had a major impact on the music artists can create
- We set out to re-imagine a user’s listening experience, with the idea that musicians and producers could discover new artistic territory

Failures and Recoveries
- 3-axis accelerometer processed by Arduino and Hairless Serial to MIDI converter software talks to Reaper (Digital Audio Workstation) and uses UNITY SPatializer Algorithm for 3D audio effect

Current Prototype
- Building a mobile listening experience
  o Low Latency
    ■ Target latency is below 60ms, the smallest perceivable latency for head-tracking audio
    ■ Started with HTTP requests from iPhone to tracker, moved to web sockets with lower overhead
  o Low Cost
- To make solution portable, we used 3.7V LiPoly/LiIon battery with a circuit to step up the voltage to 5v

Further Improvements
- Casing - refined case design, market-ready
- User Interface - improve user experience
- Content - spatialization improvements, creation software
  o Audio engine improvement to make effect more clear
- Marketing - how to connect to potential users

Conclusions
- Achieving low latency data between the head tracker and App is crucial for creating an immersive experience for the user
- When artists begin uploading creative content to the app, the full potential of this technology will be realized

Acknowledgements and References
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