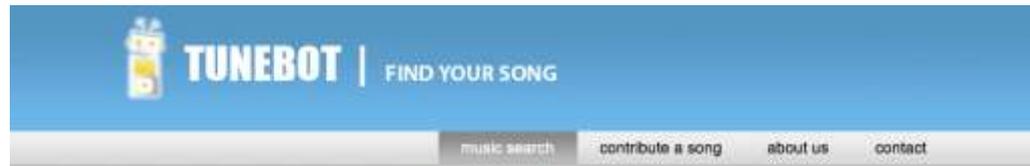


Tunebot in the Cloud

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What is Tunebot?



iTunes has over 3 Million songs in its Database. We only have 2692.
Help us grow by [Contributing A Song](#).



What is Tunebot?

<http://tunebot.cs.northwestern.edu>

- Automated online music search engine for query-by-humming (QBH).
- Users sing or hum tunes to search.
- Queries are matched against other sung examples that have been contributed.
- Current DB: 8200 examples of 2700 songs

What is Tunebot?

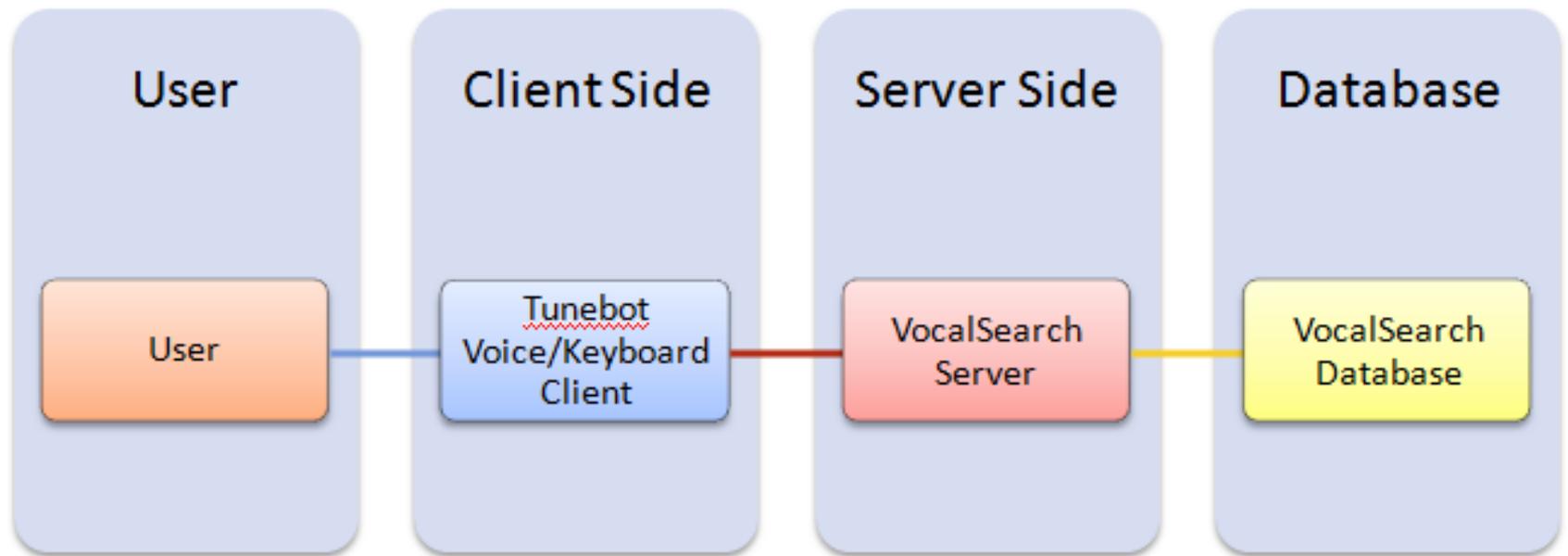
- A project of the Interactive Audio Lab led by Prof. Bryan Pardo (EECS)
<http://music.cs.northwestern.edu>
- Single-machine locally-hosted installation
- PHP/Flash/iPhone front-end running on Apache
- Java/MySQL back-end running as a Tomcat servlet

Tunebot Traffic

(Source: Google Analytics)



Architecture



Goals

- Improve query response time to < 1 sec
 - Typical query takes 5 seconds to complete
 - Computation is linear in DB size
- Handle larger database
 - DB expected to grow to “critical mass” of 10K
- Adapt to growing and varying load
 - Handle traffic spikes

Considerations

- Contributions should be visible immediately to the contributor.
- Contributions and queries are valuable.
- Deployment and maintenance must be easy.
- Cost
- Revenue
- Research

Proposals

- Fully locally-hosted cluster
- Fully Cloud-based deployment
- Hybrid local-Cloud deployment
 - front-end local, back-end Cloud
 - full local deployment that scales to Cloud with demand (dynamic provisioning)

Project Plan

- Port to Linux (done)
- Load testing framework (in progress)
- Deploy single instance in Cloud (in progress)
- Load-balancing front-end with replicated DBs
 - handle many multiple users simultaneously
- Parallelized queries
 - speed up response for a single user
- Dynamic provisioning

Issues

- Existing code is at advanced prototype level
 - Numerous implementation details have delayed progress to date.
- Tight coupling between front-end and back-end, front-end and database.
- Maintaining database integrity