



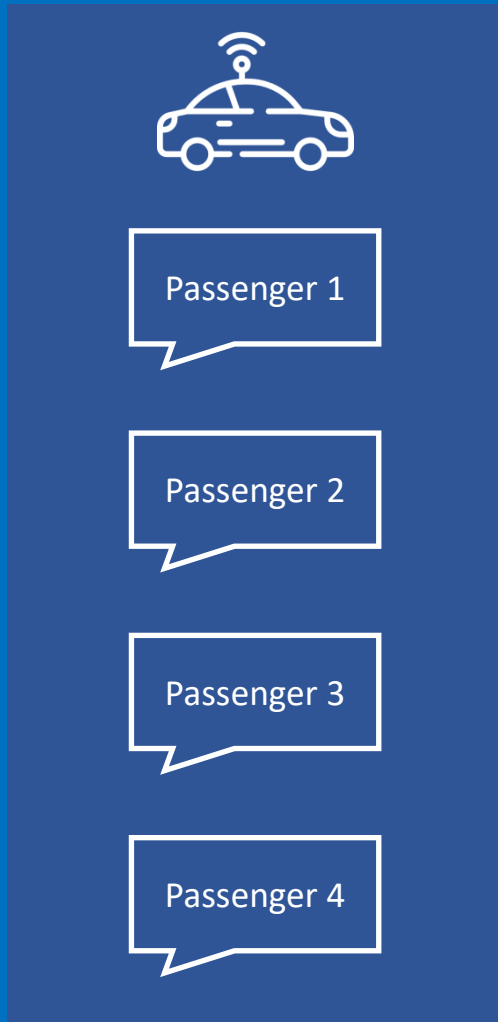
# SHEnetics

NVIDIA Jetson Developer Challenge  
Technology Architecture Diagram

# SHEnetics Technology Overview

- Built on 20+ years of R&D and global deployments
- Conversational Artificial Intelligence Voice Assistant
- Automotive and Avionics Grade (works both online and offline modes)
- Open standards interface (REST, websockets, socketio)
- Highly scalable, globally deployable architecture
- Hybrid deployment from cloud, on-premise and embedded
- White label platform
- System and user based knowledge graphs
- Machine learning
- Personalization engine for relevant recommendations
- API and Plugin architecture

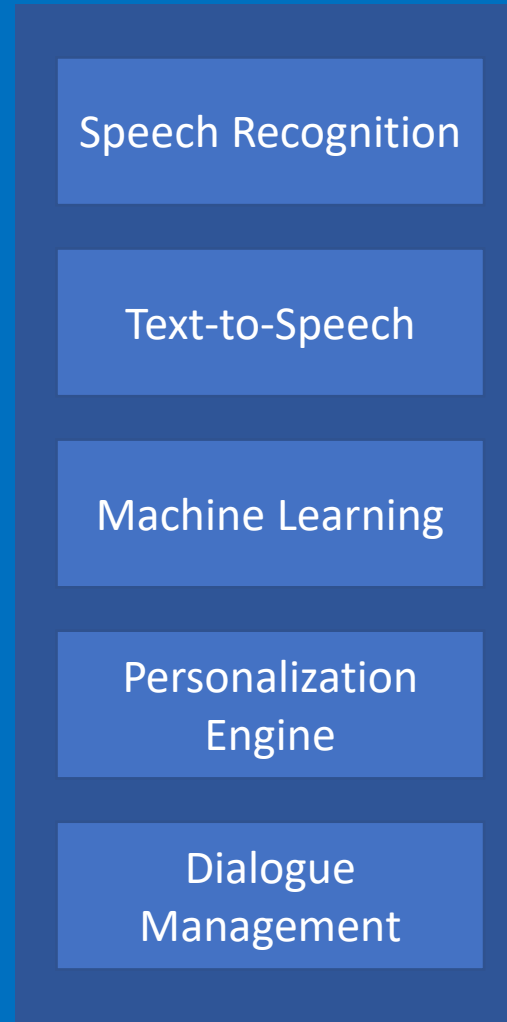
# SHEnetics Technology Stack



Multi-Channel  
Conversations



Platform



SHEnetics AI  
Voice Assistant



Content

# SHEnetics Conversational AI Engine



## Query

*Find a pizza restaurant*

*Play the Foo Fighters*

*What's the weather tomorrow?*

*How do you say  
Hello how are you?  
In Spanish*

*Make it cooler downstairs*



## Language Processing

Language Identification

Part of Speech Tagging

Morphological Analysis

Stemming

Tokenizing

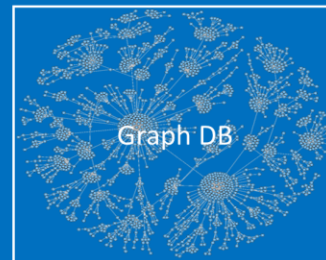


## Semantic Reasoning

Noun Phrase Extraction

Content Identification

Knowledge Graph



Semantic Web



## Conversational AI

Context Driven

Elastic Memory

Dynamic Dialogues

Plugin Architecture

Age Appropriate Dialogue

Patent Pending

# Sample REST API (Auth and Query)

## Auth API Token

### Request

Name	Method	Description
/api/auth	POST	Retrieves an API access

### Parameters

Name	Data Type	Required / Optional	Description
key	String	required	API key
secret	String	required	API secret

## Query

### Request

Name	Method	Description
/api/query	GET	Performs a search request

### Parameters

Name	Data Type	Required / Optional	Description
key	String	required	API token
id	String	required	User access token
q	String	required	Search query request
l	String	optional	Language ID

# Sample REST API (Speech Recognition and Text to Speech)

## Speech-to-Text-Stream

### Request

Name	Method	Description
/api/speechToTextStream	POST	Converts an audio stream into text

### Parameters

Name	Data Type	Required / Optional	Description
key	String	required	API token
codec	String	required	"pcm" or "opus"
lexicon	String Array	optional	Array of words or phrases that are unique to the utterance and which augment the general language model. See speechToText for an example.

## Text-to-Speech

### Request

Name	Method	Description
/api/textToSpeech	GET	Converts text-to-speech and returns an MP3 file

### Parameters

Name	Data Type	Required / Optional	Description
key	String	required	API token
text	String	required	Text string to convert to audio
id	String	required	Unique ID for the audio file
voice	String	optional	Voice ID

# Sample REST API (Event Triggers)

## Event

### Request

Name	Method	Description
/api/event	GET	Trigger a conversational element

### Parameters

Name	Data Type	Required / Optional	Description
key	String	required	API token
id	String	required	User access token
event	String	required	Event name
webhook	String	optional	URL POST endpoint to receive output mp3 file link and associated webhookdata object
webhookdata	String	optional	Custom URL parameters that will be passed back in the webhook POST. Ex: &id=abc123&data=hello world

Sample Event: This triggers the event CarEngineOverheat and passes the parameter temp=250

```
/api/event?key={API_TOKEN}&id={ACCESS_KEY}&event=CarEngineOverheat&temp=250
```

# Sample Plugin Module in JavaScript

```
1  'use strict';
2
3  var async = require('async');
4
5  plugin.demo = function(session, params, cb) {
6      if (!session || !cb) return;
7
8      console.log("SHE.ai plugin demo");
9      if (params) console.log("params=" + params);
10
11     async.series([
12         // test 1
13         function(seriesCB) {
14             seriesCB(session.input === 'hello world');
15         },
16         // test 2
17         function(seriesCB) {
18             seriesCB(session.input === 'test 2');
19         }
20     ], function(err, res) {
21         console.dir(res);
22         cb();
23     });
24 }
```



# SHEnetics Personalization Engine

- Hybrid Recommendation Engine architecture
- Combines Collaborative and Content Based filtering methods utilizing prior user interactions / dialogues
- Cold Start recommendations based on sensory input including geolocation
- User History preferences, favorites and prior dialogues stored in user profile

