Emotional LED Light

TJBot Nodes in Node-RED

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Edit function node

Delete   Cancel   Done

∨ node properties

🏷 Name   Find Top Emotion

🔧 Function

```
1   var emotions = msg.response.tones;
2
3   msg.payload = emotions[Object.keys(emotions)
4           .reduce(function(a, b){
5               return emotions[a].score > emotions[b].score ? a : b
6
7           })];
8
9   return msg;
10
```
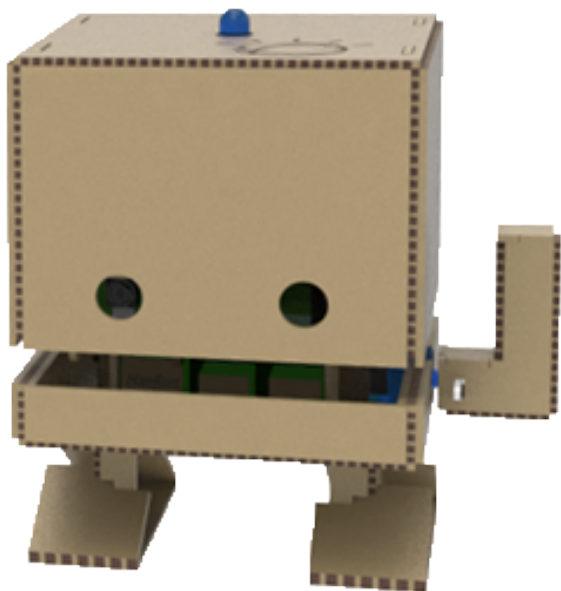
Use the function node to find top scoring emotion from Watson Tone Analyzer service.

Start Listening		set msg.mode		Listen		Analyze Tone		Find Top Emotion		switch		Color: red
Stop Listening												Color: magenta
												Color: green
												Color: yellow
												Color: blue
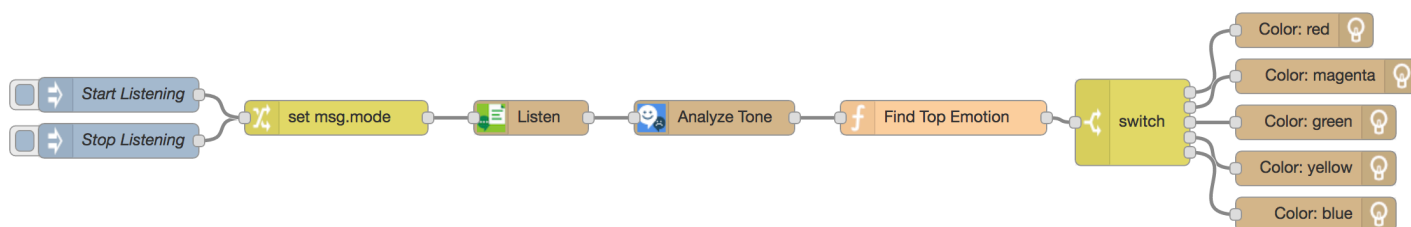
Train TJBot to listen using the microphone and the Watson Speech to Text service, analyze emotions in the utterance with the Watson Tone Analyzer service, and control a LED light to represent most prevalent emotion.
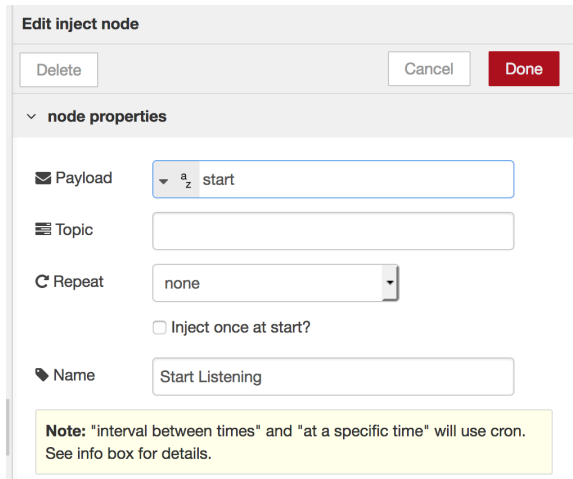
A digital copy of this lab and completed flow can be found at:
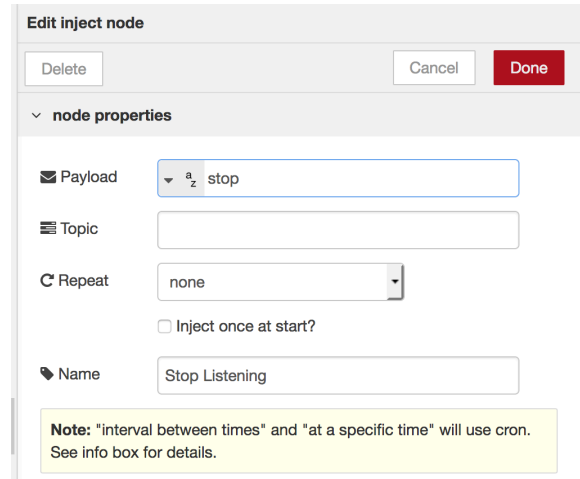http://ibm.biz/node-red-tjbot-emotional-light

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Train TJBot to Listen and React to Emotions

In this lab, we'll use the listen and analyze tone nodes to train TJBot to listen to utterances and analyze the emotion, lighting up an LED light based on which emotion is most prevalent. You will need a microphone and LED connected to the TJBot for this lab.
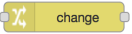
1. In the Node-RED editor running on the Raspberry Pi, drag two **inject** nodes onto the canvas. Double click on each node and configure as shown below.
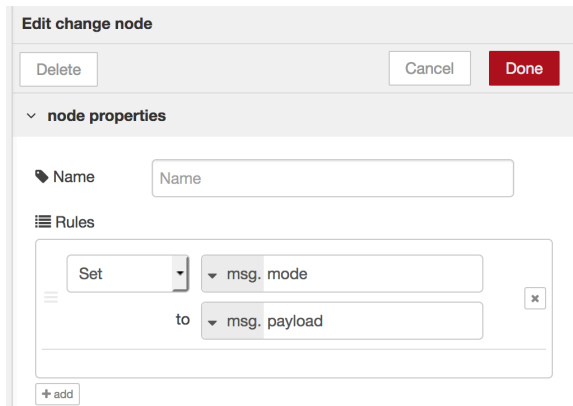
Edit inject node

| Delete | | Cancel | Done |

∨ node properties

✉ Payload   a z start

≣ Topic

↻ Repeat   none

☐ Inject once at start?

🏷 Name   Start Listening

Note: "interval between times" and "at a specific time" will use cron. See info box for details.

Edit inject node

| Delete | | Cancel | Done |

∨ node properties

✉ Payload   a z stop

≣ Topic

↻ Repeat   none
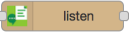
☐ Inject once at start?

🏷 Name   Stop Listening

Note: "interval between times" and "at a specific time" will use cron. See info box for details.
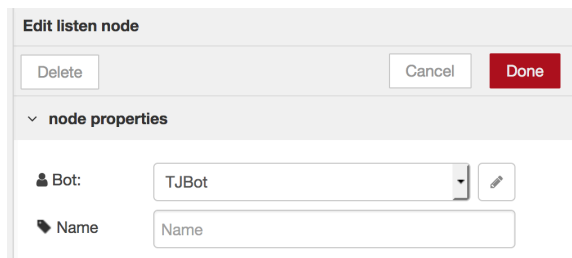
2. Add a **change** node as shown below. This node will take the payload from the inject nodes and set the **msg.mode** property, which the listen node in the next step will use.

Edit change node

| Delete | | Cancel | Done |

∨ node properties

🏷 Name   Name

≣ Rules

Set   ▾ msg. mode
    to   ▾ msg. payload   ✕

＋ add

3. Add a [listen] node as shown below. The listen node has several modes, start and stop, that can be configured programmatically using the **msg.mode** property to start and stop listening. When listening is enabled, the listen node produces messages as TJBot hears and transcribes words, with the text being passed in the **msg.payload** property.
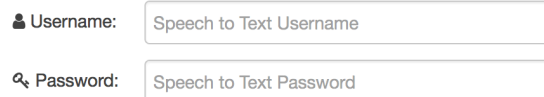
   The listen node uses the Watson Speech to Text service, which requires service credentials from IBM Bluemix. Click on the pencil icon to the right of the **Bot** dropdown menu.
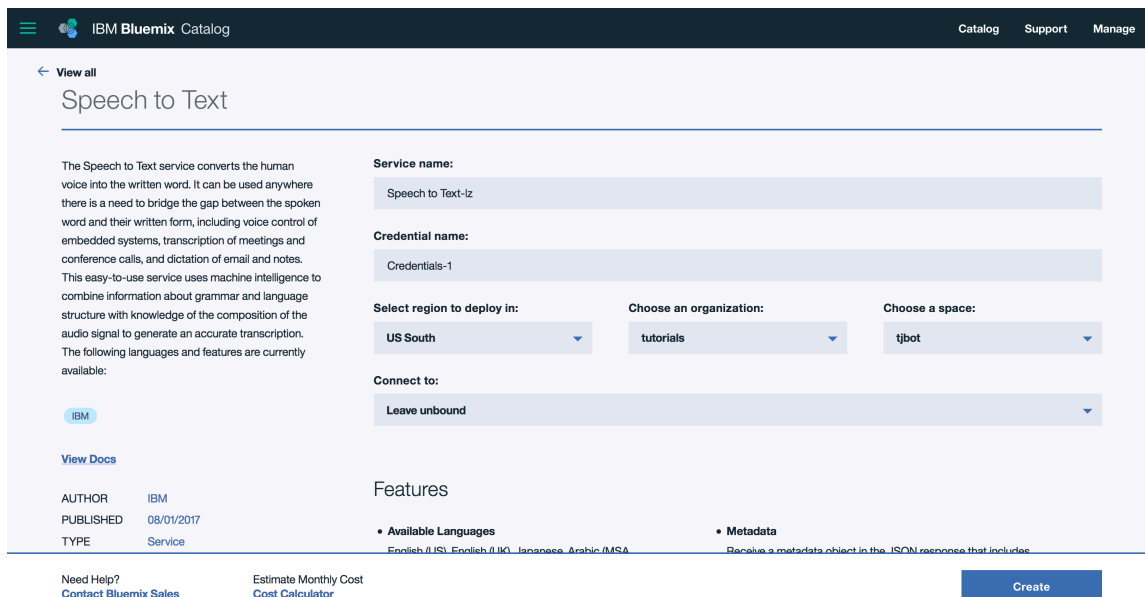
4. Click on the link icon next to the **Speech to Text** heading to launch into the IBM Bluemix console and create a Watson Speech to Text service instance.

5. If you don't have an IBM Bluemix account, sign up at `bluemix.net`. Sign into your account if prompted. Leave the service name as is and click **Create**.

6. Click on **Service Credentials** in the menu on the left. Click on **View Credentials** to display the service credentials.

7. Copy the username and password into the fields back in the Node-RED editor under the **Speech to Text** section.

```
{
  "url": "https://stream.watsonplatform.net/speech-to-text/api",
  "username": "cf63b1f3-ef18-4628-86c8-6b1871e076b9",
  "password": "MWNwz3qcdIab"
}
```

Speech to Text ⤢

👤 Username: cf63b1f3-ef18-4628-86c8-6b1871e076b9

🔑 Password: ••••••••

8. Add a [analyze tone] node as shown below. Select **Emotion** from the **Tones** dropdown menu.

The analyze node uses the Watson Tone Analyzer service, which requires service credentials from IBM Bluemix. Click on the pencil icon to the right of the **Bot** dropdown menu.

Edit analyze tone node

| Delete | | Cancel | Done |

⌄ **node properties**

👤 Bot: TJBot ✎

💬 Tones   Emotion

🏷 Name   Name

9. Click on the link icon next to the **Tone Analyzer** heading to launch into the IBM Bluemix console and create a Watson Tone Analyzer service instance.

Tone Analyzer ⤢

👤 Username: Tone Analyzer Username

🔑 Password: Tone Analyzer Password

10. Leave the service name as is and click **Create**.

≡   IBM **Bluemix** Catalog   Catalog   Support   Manage

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Tone Analyzer

People show various tones, such as joy, sadness, anger, and agreeableness, in daily communications. Such tones can impact the effectiveness of communication in different contexts. Tone Analyzer leverages cognitive linguistic analysis to identify a variety of tones at both the sentence and document level. This insight can then used to refine and improve communications. It detects three types of tones, including emotion (anger, disgust, fear, joy and sadness), social propensities (openness, conscientiousness, extroversion, agreeableness, and emotional range), and language styles (analytical, confident and tentative) from text.

Lite   IBM

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AUTHOR   IBM
PUBLISHED   08/01/2017

Service name:
Tone Analyzer-5p

Credential name:
Credentials-1

Select region to deploy in: **Choose an organization:**   **Choose a space:**
US South   tutorials   tjbot

Connect to:
Leave unbound
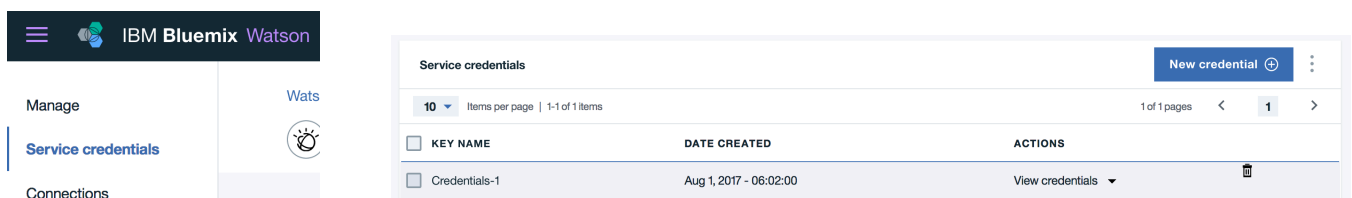
Pricing Plans

Monthly prices shown are for country or region: United States

| PLAN | FEATURES | PRICING |

Need Help?   Estimate Monthly Cost
Contact Bluemix Sales   Cost Calculator   **Create**

11. Click on **Service Credentials** in the menu on the left. Click on **View Credentials** to display the service credentials.
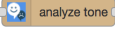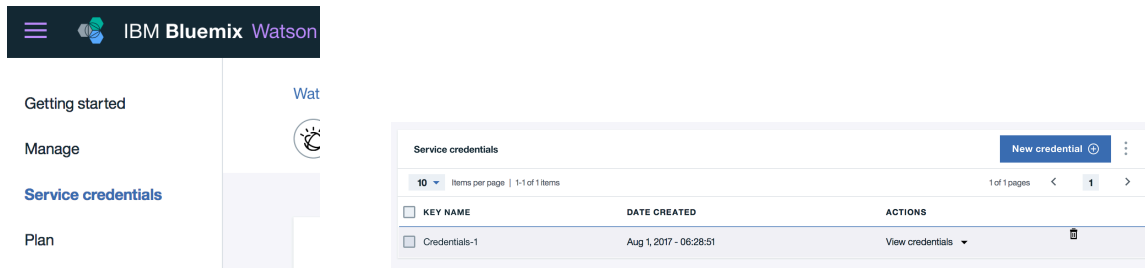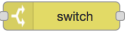

12. Copy the username and password into the fields back in the Node-RED editor under the **Tone Analyzer** section.

```
{
  "url": "https://gateway.watsonplatform.net/tone-analyzer/api",
  "username": "6e3454ed-7b74-4e7f-b169-c6603b58ad56",
  "password": "QrmEK64YsyuM"
}
```

Tone Analyzer ⬈

👤 Username: `6e3454ed-7b74-4e7f-b169-c6603b58ad56`

🔑 Password: `•••••••••••`

13. Watson Tone Analyzer returns scores for five emotions: anger, disgust, fear, joy, and sadness. Use a [f function] node to find the emotion that scores the highest.

Edit function node

Delete   Cancel   Done

∨ **node properties**

🏷 Name   `Find Top Emotion`   📄▾

🔧 Function

```
 1   var emotions = msg.response.tones;
 2
 3   msg.payload = emotions[Object.keys(emotions)
 4               .reduce(function(a, b){
 5                   return emotions[a].score > emotions[b].score ? a : b
 6
 7               })];
 8
 9   return msg;
10
```
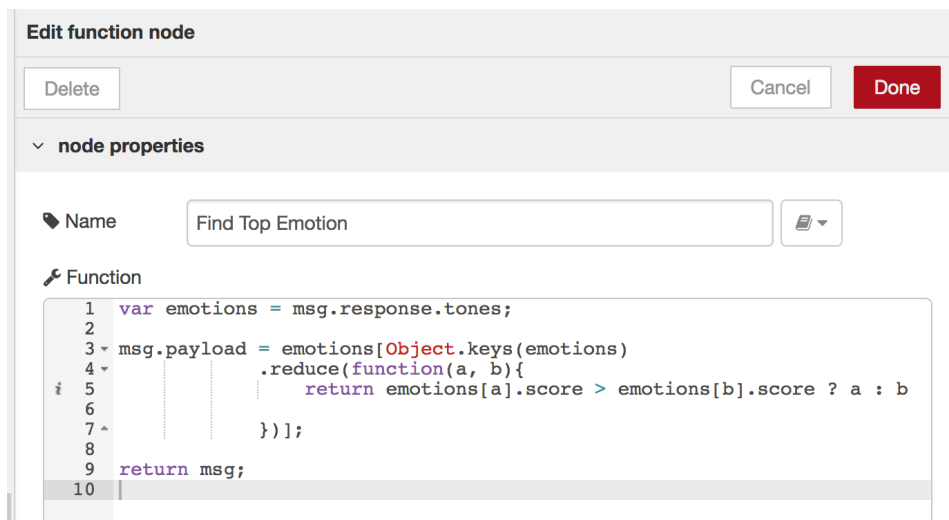
14. Add a [switch] node to test which emotion scored highest as shown below.

Edit switch node

Delete	Cancel Done

∨ node properties

🏷 Name   [Name   ]

Property   ▾ msg. payload.tone_id

≡ [== ▾] [▾ aᶻ anger   ] → 1 ✕
≡ [== ▾] [▾ aᶻ disgust] → 2 ✕
≡ [== ▾] [▾ aᶻ fear   ] → 3 ✕
≡ [== ▾] [▾ aᶻ joy   ] → 4 ✕
≡ [== ▾] [▾ aᶻ sadness] → 5 ✕

＋add

[stopping after first match   ▾]

15. Add five shine nodes, each with a color representing one of the emotions: red (anger), magenta (disgust), green (fear), yellow (joy), and blue (sadness).

Edit shine node

Delete	Cancel Done

∨ node properties

👤 Bot: [TJBot   ▾] ✏
⚙ Mode: [Shine   ▾]
🖊 Color: [red   ▾]
🏷 Name   [Name   ]

Edit shine node

Delete	Cancel Done

∨ node properties

👤 Bot: [TJBot   ▾] ✏
⚙ Mode: [Shine   ▾]
🖊 Color: [magenta   ▾]
🏷 Name   [Name   ]

Edit shine node

Delete	Cancel Done

∨ node properties

👤 Bot: [TJBot   ▾] ✏
⚙ Mode: [Shine   ▾]
🖊 Color: [green   ▾]
🏷 Name   [Name   ]

Edit shine node

Delete	Cancel Done

∨ node properties

👤 Bot: [TJBot   ▾] ✏
⚙ Mode: [Shine   ▾]
🖊 Color: [yellow   ▾]
🏷 Name   [Name   ]

Edit shine node

| Delete | | Cancel | Done |

∨ node properties
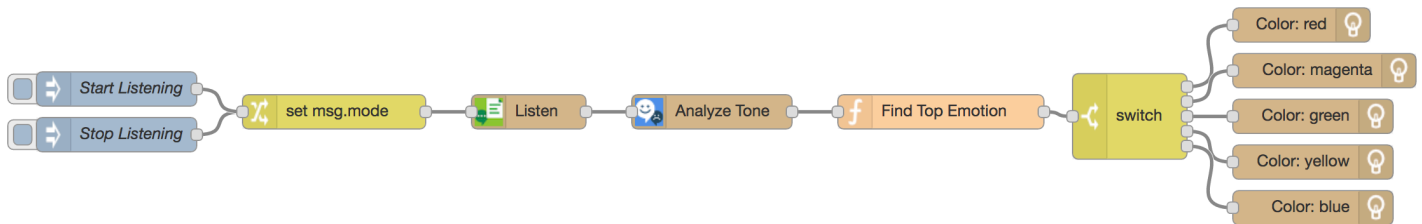
👤 Bot: TJBot ▾ ✏

⚙ Mode: Shine ▾

✏ Color: blue ▾

🏷 Name   Name

16. Connect the nodes together as shown below.

17. Click on the ⬛ Deploy ▾ button in the top-right corner of the Node-RED editor to save and deploy the changes.

18. Click on the tab to the left of the inject node labeled **Start Listening** to activate the microphone. Speak into the microphone and wait for the LED to turn the color that represents the emotion that's most prevalent. Click on the tab to the left of the inject node labeled **Stop Listening** to deactivate the microphone.