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## AUTO VOLUME YOUR LAPTOP

HP INC

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**Auto volume your laptop**

**Abstract**

Every user uses their laptop in a different place, some users work at the office, some users work at a coffee shop and maybe others use it at home. What is the difference between these places? The answer is environmental sound is different.

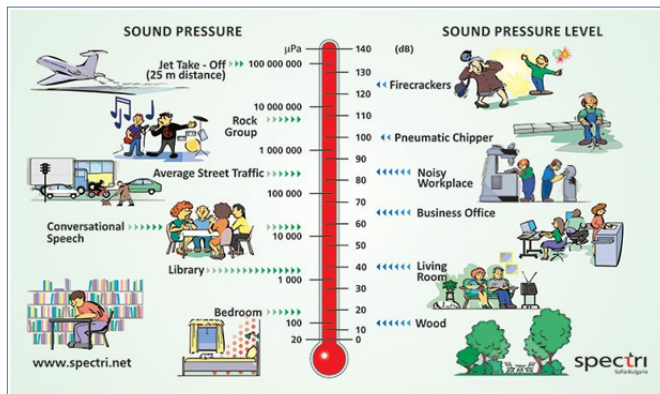
When the users listen to the music or in a call with the headphone, they usually adjust the volume manually. If the environment is noisy, such as coffee shops or stuck in traffic, the users need to volume up in order to hear clearly. And if the users use the laptop at home or in a quiet place, they need to volume down to prevent too loud for ears.

Our design is to use machine learning to auto adjust the volume in different environmental sounds for user.



**Problems Solved**

When users need to use a laptop to listen to music or join an online meeting, they usually use headphones or laptop speakers to listen to the voice. If the users feel the sound is too loud, they adjust the volume down, otherwise, if the sound is too small, they adjust the volume up. And the volume level is based on the sound source and environmental sound. The problem is the users need to adjust the volume manually if they change the different workplaces. Our design is to sort out the manually adjust problem, let the laptop auto do the volume change.

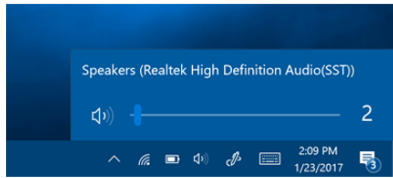


Different volume level with different places

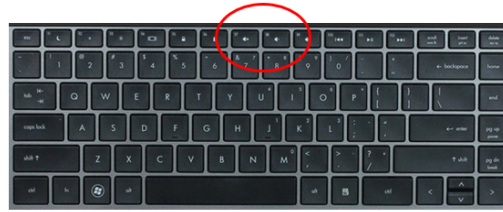
Different environmental has different noise level

**Prior Art**

So far, the volume change needs the users to adjust by themselves, when the users in a noisy or a quiet place, the volume level need to control by the users.



Adjust volume by user

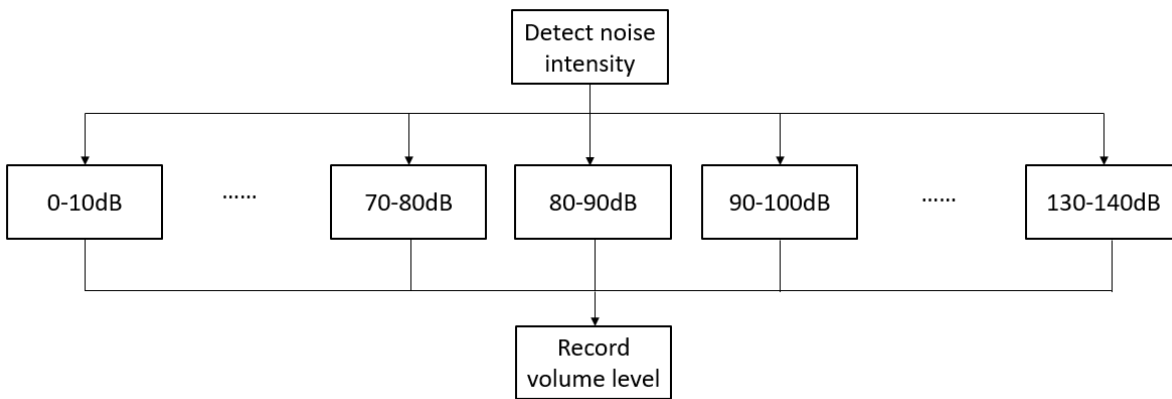


Adjust volume with keyboard fn key

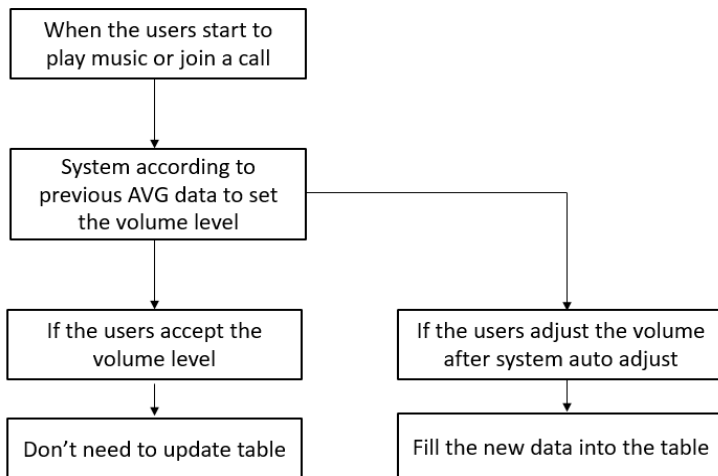
**Product Drawing:**

Our solution is to use system microphone to record environmental sound and to detect dB value, and the system also record the volume level if the users adjust it.

When the users start to play music or join a call, the system will start to detect noise intensity, and do the classification with different dB value. After the classification, the system will record the user's volume setting.



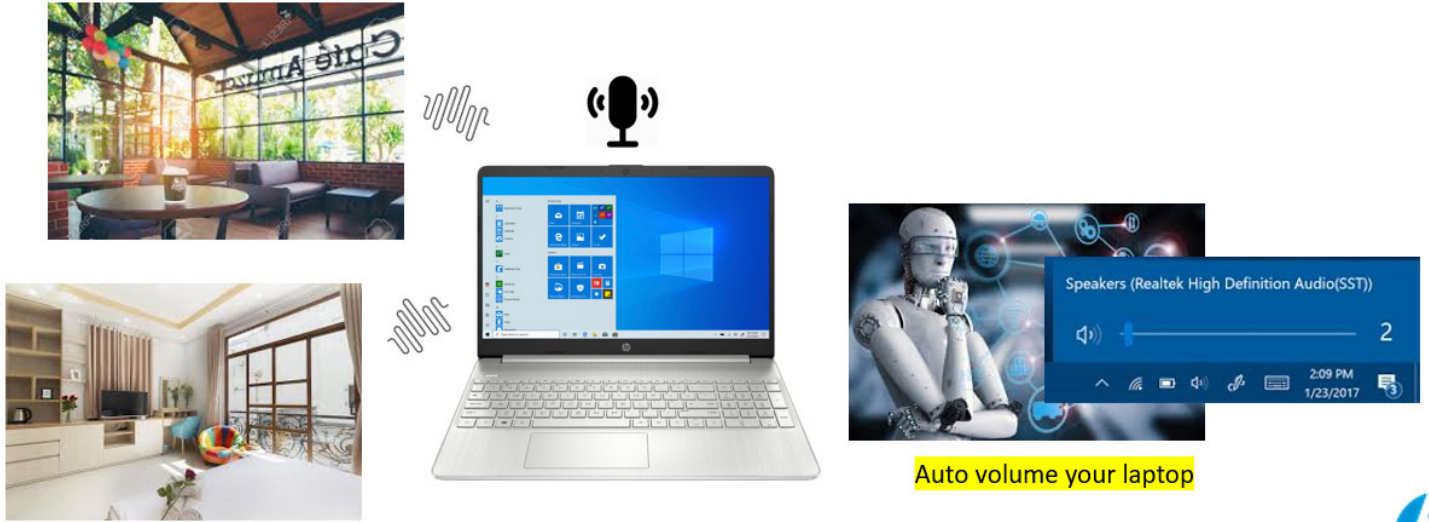
All the record data fill into a table, and the algorithm will calculate the average volume level. When the users start to play music or join a call, the system will auto adjust the average volume level with before data. After the system collects data more and more data, the auto volume algorithm will be more precise.



	User volume setting	1	2	3	4	5	6	7	8	9	10	Avg level
Noise intensity (dB)	0-10	v	v									3
	10-20	v		v								2.5
	20-30			v								4
	30-40			v		v						4.5
	40-50				v							4
	50-60					v						5
	60-70				v							4
	70-80							v				8
	80-90				v					v		7.5
	90-100					v						6
	100-110							v	v			8
	110-120								v	v		8
	120-130									v	v	v
130-140											v	10

## Advantages

In our design, we improve the user experience for audio listening, whether the users use headphones or speakers. The system can auto-adjust the volume level with the user's usage habit with different places without the users adjust the volume manually.



*Disclosed by Yen-Chi George Chen and Hertz Tseng, HP Inc.*