Exploring Voice Controlled Smart Speakers

What are “Voice Controlled Smart Speakers”?
Voice-controlled smart speakers are the closest thing to a digital version of a “personal assistant”, with a few extra (or less) tricks. If you own a smartphone – or have used one – you may already have or have seen a version of one of these in action, such as Apple’s Siri, Google’s Assistant, or Microsoft’s Cortana. These assistants can come in other forms, such as:

- Tablets (Android tablets, Kindle Fires, Apple iPads, Windows 10 tablets)
- Smartphones
- Speakers or “Hubs”
- Chromecasts or Android-powered TVs, FireTV
- 3rd Party Devices (Ecobee Thermostat, Sonos Speaker Systems, etc.)

The “smart speaker” is typically a specific variant of the digital assistant made to resemble part of a home’s furnishings by inconspicuously hiding amongst other electronics. The primary contenders within this market space are:

- Apple HomePod (MSRP: $299)
- Google Home (Mini) (MSRP: $49.00 – 299.00)
- Amazon Echo (Dot) (MSRP: $49.99 – 149.99)

We will be primarily focusing on the low-cost options, the Google Home Mini and the Amazon Echo Dot.

Who makes these devices?
There are many small start-ups interested in artificial intelligence machine learning with voice control. The larger, more well-known companies that have invested in this are, in order, Amazon, Google, Microsoft, Apple, and MyCroft.

Where can we get these?
For Amazon and Google products, nearly any store that sells computer-adjacent equipment, such as Wal-Mart, Target, Staples, Best Buy, and the like. For Apple: the Apple store. Microsoft (hardware speakers) rely on 3rd party manufacturers, such as Harman/Kardon. MyCroft is only available for purchase online (and all of the others can be purchased online as well).

What can they do?
There are simple tasks they can accomplish, some semi-more difficult tasks they can complete, and advanced features. I’ll try to break them down a bit...

Simple Tasks:
- Provide the news
- Play music / radio
- Spell words
- Complete mathematic problems
- Handle conversions, such as distance, weight, length, volume, temperature, currency and (live) currency rates
- Set timers and alarms
- Set reminders or events to a personal calendar
- Create a shopping list
- Provide the current time, date, day of the week, weather, or moon phase
Possibly more difficult tasks:
- Tell you what’s on TV tonight
- Give you sports scores, standings, or schedules
- What’s new in theaters and times that movies are playing locally (or elsewhere)
- How long your commute to work or home is currently expected to be
- Provide search results from the internet

More advanced behavior:
- Find your misplaced phone (make it ring)
- Translation (English to Korean, or Mandarin, or French, etc...)
- Behave like an intercom system
- Make phone calls
- Control electronics (TVs, coffee makers, ovens, microwaves, garage doors, sprinkler systems) – convenience or accessibility for those physically otherwise unable, or who would have difficulty without (“Which button, again?”)
- Play games
- Run what are known as “Routines” (pre-configured, by you, commands that occur from a predetermined action)
- “Smart home”

Neat little tricks:
- Shared shopping lists
- Set reminders
- Remember, and “remind” (“What is ___ (remembered term) ___?”)
- Provide “Good news” instead of just “news”
- Set location-based reminders with a connected smartphone with location enabled
- Business hours, contact info, and sometimes important employee information

Smart Home
A little blurb:

These type of devices have sped adoption for many towards implementing certain “smart home” features. A smart home is touted as one that can automate many things on its own, either on a set schedule or in response to some sort of scenario. A smart speaker cannot provide all of the functionality inherent in today’s current (achievable) vision of a smart home, but it certainly is a valuable component. A few of the higher cost speaker options do indeed attempt to fill more of that void by acting as a minimal smart home “hub”. A smart home “hub” is a device that can centrally control things within a home beyond what the standard smart speakers can. A “Smart Home” discussion is too broad a category to include here, but mentioning that smart speakers are an extremely useful part of the system is worthwhile to note.

Privacy
These companies are constantly trying to improve their services and increase the devices’ ability to properly respond to real-world conversational queries. All of these digital assistants send a digital version of your voice commands to their massive servers to analyze, break apart, and convert your speech from verbal queries/commands into actionable commands to a computer. In doing so, a recording of your voice is sent to these companies for further analysis, and potentially direct listening. By doing so, they intend to improve how, and how well, their systems work. You must agree to this knowledge in order to use these devices, there is no opt-out beyond not using the hardware.

The MyCrost smart assistant claims to never sell or collect your personal data (voice recordings) – though, like the other options, it does also need to transmit your voice over the internet to be processed by their computers.

Apple claims to delete your recordings once it’s completed analyzing, processing, and responding to them.