**Notes**

1. Citing 1
   * Benefits would arise from collecting correct raw data in an efficient way, and then analyzing and mining the data for correlations among things and services to provide more services via the Internet of things.
   * Sensing with computers is being mentioned as a future service.
2. Citing 2
   * "Substantial growth in enduser demand and data volume have resulted in the creation of more cloud data centers at ever-growing scale, which in turn increases energy consumption, CO2 emissions, and we see that requires cooling infrastructure for removal"
     + Before we start looking at end user optimizations, we must look at CDC optimizations to reduce the impact of these locations on the environment and the surroundings.
     + Solutions: Resource scheduling policies
   * "Internet of Things possess several characteristics central to their operation, including:
     + (i) Highly dynamic systems and network membership must cope with volatility. Ex. printing off your phone requires you to be connected to the router
     + (ii) Devices are highly heterogeneous in terms of both computing performance and capabilities, and must cope with limited processing, memory and persistent storage. (Differences between Orbing and Canary and how they convey data to mom)
     + (iii) Systems are managed and controlled by multiple stakeholders, requiring federated mechanisms for secure management of collected IoT devices." (Life360 and moms DriveWise sensor typically operate in sync and tell mom how fast the car is moving)
   * "Some e-health applications are able to monitor patient data in real time"
   * "Maintaining the integrity of the data to ensure it is not sent by unregistered source are very important for the credibility of the systems."
   * For IoT tech to grow in the right direction, the design of it must be fault proof. "We need to come out with application designs/architecture that are not only scalable to handle huge amounts of data but also reliable and fast enough to give efficient performance.
     + Major concerns to address in order to advance IoT
       - Latency - optimize where the IoT device has to send its data to in order to improve processing time
       - Bandwidth - distribute it evenly and optimally to only send out what data is necessary.
3. Citing 3
   * "There will eventually be an AI in which can evaluate a player’s playing style, stats and other types of data that can accurately predict if the player is a great fit for the team or simply have an AI give feedback to a player on what needs to be improved and what playing style can fit their athletic ability."
4. Citing 4
   * Waste Management Companies have barely used tech innovations to improve operational efficiencies, they've only improved route efficiencies.
   * Trucks often visit dumpsters that do not need emptying
     + **Garbage cans should have a garbage level sensor to tell how much garbage is in the can and also a sensor detecting how much garbage is put in per day, on average and detect trends on certain days of the week and year.**
     + **They should notify garbage pickup crews when there is 3 days left until the can is entirely full, and the can will become a dot on the map**
     + **With plenty of cans around a city, a program can optimize a route to make the pickup as efficient as possible and reduce waste and costs.**
   * "Gateways play the role of bridging the gap between the IoT platform and sensor, sending data from the sensor to the cloud.
5. Citing 5

* "Today, we are seeing a lot of growth with both AI and IoT. These technologies combine to enable the next level of automation and productivity while decreasing costs."
* IoT will be monitoring everything, from raw material to end product, pithing the next couple years to ensure high quality and ethical practice. (Ex. Milk humidity being monitored by IoT device from factory to store)

**Citings**

1. Wang. (2012). Special Issue: Internet of Things: Architecture, Protocols and Services. *IEEE Sensors Journal*, *12*(12), 3495–3495. doi: 10.1109/jsen.2012.2231274
2. Gill, S. S., Tuli, S., Xu, M., Singh, I., Singh, K. V., Lindsay, D., … Garraghan, P. (2019). Transformative effects of IoT, Blockchain and Artificial Intelligence on cloud computing: Evolution, vision, trends and open challenges. *Internet of Things*, *8*, 100118. doi: 10.1016/j.iot.2019.100118
3. Gudino, M. (2019, November 14). Sports IoT: how athletes are integrating IoT. Retrieved from <https://iot.eetimes.com/sports-iot-how-athletes-are-integrating-iot/>
4. Verma, S. (2020, March 16). How Smart Waste Management is Making Waste Collection Efficient. Retrieved April 2, 2020, from <https://www.rtinsights.com/iot-makes-smart-waste-management-efficient/>
5. Schmelzer, R. (2019, October 1). Making The Internet Of Things (IoT) More Intelligent With AI. Retrieved April 2, 2020, from <https://www.forbes.com/sites/cognitiveworld/2019/10/01/making-the-internet-of-things-iot-more-intelligent-with-ai/#239a72fefd9b>

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