INF632 Homework 1

Compare and Contrast Commodity Devices

Assigned: January 15, 2026.

Due: January 29, 2026 at 11:59pm. Submissions turned in after this time and still within two weeks of this deadline will be automatically docked 50% of the possible points.

Submission: First, send me an invite to see your repository (GitHub or Google Drive). Second, share a direct link to your repo / folder on canvas.nau.edu by the deadline.

Points: EE499 students, this is worth 15% of your final grade. EE599 students, this is worth 10% of your final grade.

Background:

There are numerous commodity, commercially available wearable devices on the market. Many of these are focused around assessing physical activity, and have an end user focus. Some of these "smarter" devices also function as an interface, or a peripheral, to technologies such as a smart phone. Some, though certainly not all, also have means of recording data to the cloud, such as a dashboard, that allows the user to see a history of collected data. Some systems even layer in a social component, through FaceBook or a device/company specific social network.

Assignment:

Your assignment will be to research a wearable device and put together a report comparing and contrasting your selected device to other similar devices on the market. You *can include specialty medical equipment, such as a CGM (continuous glucose monitor) or similar. You should explain the history of the device, the company, what market they are targeting, and describe the dimensions of functionality of the device. Identify at least three other similar devices to compare against. A table showing some of the similarities and differences would be helpful and informative. You should also provide details about how any data is collected, or shared with the user. What of that data does the company use, and how?*

Expectations:

I expect your report to be complete, on the order of 3-5 pages. All citations should be in IEEE format, and you need at least two describing how your primary commodity is used in a research setting. You submission should be single spaced, and a normal font size.

Grading Rubric:

While I do no subscribe to the notion that grades should be standardized (Average is a C), I do want to be sure to reward those who put real energy into any given assignment. As such, I define a B grade as "Meets Expectations", and an A grade as "Exceeds Expectations". To merit an A, I need to see you going beyond that of the baseline "Meets Expectations". And while I'd like not to

have to state it, efforts that do not "Meet Expectations" are likely to warrant a C grade or worse. Your submission will be graded as follows:

Expectation	Fraction of Assignment Points	UG: Meets Expectations	UG:Exceeds, G:Meets Expectations	G:Exceeds Expectations
Selection of Wearables	20%	Three wearables are compared and contrasted;	and the primary wearable to review is compared and contrasted to at least three appropriately similar devices;	and is compared and contrasted with at least two fundamentally different (sensors, data, market, etc) devices that are intended to assess similar health characteristics or behaviors.
Market	10%	The market for these devices are identified and the similarities or overlap is detailed;	and The market for this device and it competitors is compared and contrasted to at least one adjacent market;	and the future of the market is discussed, with appropriate indicators, news articles, or company reports pointing to why that future is likely.
Sensors	10%	All sensors on the device are identified, and the measures they collect explained;	and these sensors are compared to similar sensors or the differences between parts of the sensors are contrasted (eg, accelerometer vs rate gyro)	and the technologies are discussed, with a short history or explanation of the physics involved.
Data Handling	10%	The technologies involved in data storage and transport is explained;	and the data handling is compared across at least three devices, with attention to validity;	and the security of such handling is discussed, outlining any encryption that may be used, at least to the level such that one can understand the basics, but not necessarily to the point of implementing.
Data Access	10%	How the user accesses and uses the data is detailed;	and compared and contrasted with at least three other similar devices;	and API access of at least one of those wearables is discussed, with details sufficient that one could have a clue