Question 5:

Answer the following:

a) List the various sensor and devices on typical mobile phones.

The most common sensors and devices found on typical mobile phones are:

* **Global Positioning System (GPS):** Enables tracking and navigation
* **Face Recognition/Fingerprint(TouchID)**: Enables biometric verification and secure medium to unlock mobile devices
* **Camera:** Video calls and recording purposes
* **Temperature Sensor**: Weather applications might use these sensors or satellite data to provide accurate information about weather & upcoming trends
* **NFC (Near Field Communication) Sensors**: Used for wireless transactions and communications: AirDrop, ApplePay are all enabled due to this
* **Bluetooth & WIFI**: devices and sensors that enable network connectivity to share and exchange files and media and connects across multiple devices.

There are more sensors & devices, but these are some of the important ones that typical mobile devices contain.

Source(s):

<https://gizmodo.com/all-the-sensors-in-your-smartphone-and-how-they-work-1797121002>

<https://developer.android.com/guide/topics/connectivity/nfc#:~:text=Near%20Field%20Communication%20(NFC)%20is,Tags%20can%20range%20in%20complexity>.

b) List five of your favorite apps. Briefly describe what they do and what makes them so great.

* **Instagram:** Social media platform that enables me to stay connected with friends, family and acquaintances. What I love about this app is that it serves almost as an ‘all-in-one’ platform. Essentially, after creating an account, a user can upload posts/stories, like others and posts and have a customized page with relevant content. Additionally, you can chat on the app one-on-one or via a group and can conduct video and audio calls as well.
* **IMessage:** Iphone’s default messaging app. Again, a super convenient and effective app for messaging. Gives me the flexibility to share large files(something Instagram cannot always handle), message and easily search through past messages. Furthermore, it connects to FaceTime easily, providing a superior quality of video and audio call.
* **Fitbit:** I have a Fitbit and personally love the mobile app it connects to as the health insights the app provides are extremely accurate and beneficially in helping me stay healthy. Every time I complete a workout, I get detailed reports about the amount of fat burn, high-intensity, and low-intensity workout zones, which is an amazing summary of the intensity of the workout. Furthermore, I can log my food and water intake to understand my calorie intake and level of water. Sleep tracking is also another extremely helpful feature as I get detailed reports about my sleeping patterns.
* **Spotify:** I use Spotify for music- again, it’s almost a one-stop-shop for everything music. I can create playlists, listen to podcasts, new updates and even gain access to Hulu just through having a Spotify account. Spotify uses an AI algorithm that provides song recommendations based on the type of music present in our playlist, and it is extremely accurate and helpful at increasing my musical database ☺
* **LinkedIn:** Networking social media application. As a senior, I am heavily dependent on LinkedIn this semester to apply for jobs, engage with mentors and colleagues and connect with recruiters and seminars to increase my knowledge and network in the technology sector. Again, a similar pattern appears here, with LinkedIn being a one-stop-shop for all professional networking purposes.

c) Identify an App you use often, but you wish were better, (eg., - Uber, Lyft, Venmo, Indeed, etc.) Identify the pros and cons of each, and what features are great, but could be improved, what features are missing. For the latter two items, describe with some detail how you would implement these features and what technology might be used to implement these missing features. Be ready to present to the class.

**Uber** is an app I use often which can be improved tremendously in my opinion. Before discussing what can be improved, here is what Uber’s application **‘does right’** today:

1. **Driver Ratings**: Riders can rate drivers which ensures some level of accountability and creates user preferences for a driver.
2. **In-app Payments**: Integrates easily with customers bank and even with digital neo banks/wallets such as Apple Pay, Venmo. This makes paying for Ubers easy and hassle free
3. **Various ride types:** Uber offers about 7+ ride types. Uber Pool, UberXL, UberX are just some of them. Each have a different price range which are affected based on type of ride, current traffic patterns and end destination. This makes Uber an effective app for everyone, since one can choose a customized, cheap and comfortable mode of transportation.
4. **Safety Features:** The app allows riders to share their trip with close connects- family and friends. This gives family members and loved ones a sense of security and enables regular checks on their journey and arrival situation. While the safety features can be improved, this door-to-door tracking increases safety and comfort of riders.

On the other hand, here is what Uber **can improve:**

For the **riders:**

1. **Safety:** Right now, the app doesn’t have too many safety features besides the basic one of sharing a ride with loved ones. Uber should explore options such as a panic button which notifies emergency contacts and cops so that help can be received immediately. Additionally, having proper methods to ensure the legitimacy of the drivers and passengers can ensure that rides occur seamlessly. Having a verified symbol next to user and driver profiles can facilaite this process.
2. **Preference Mechanisms:** Allowing riders to favorite certain drivers, or filter based on ratings provides riders with more choices about the quality of service they receiver. Furthermore, women often prefer female drivers(especially during the night) and taking this into account via an algorithm can ensure safer trips and increased users.

For **drivers:**

1. **Ride Detail Transparency**: Drivers should have the ability to view the end destination of passengers before accepting rides. This gives drivers the flexibility to pick rides based on their schedule and preferences, and also allows them to plan ahead in case there are delays along the way.
2. **Increased GPS Accuracy:** Uber’s navigation system is failry accurate and gives the correct estimates about arrival times. However, the navigation can be more seamless in terms of estimating traffic buildups properly and alerting about cops nearby. Currently, Uber uses their own internal navigation system, and should explore into navigating via Google Maps/Waze API’s or improving their system to provide real-time information and updates to ride duration.