# How AI Can Improve Mobile User Experience

Ludmyla Almeida

Professor Haim Levkowitz

Mobile App Development II

March 02, 2021

**Abstract**

Effective display of data and content on a mobile user interface is crucial for a sound user experience. Successful mobile application companies, like Airbnb, Instagram, and Pinterest, have developed outstanding designs and interfaces that lure more users and increase app loyalty. In this paper, I will explore novel technologies that should be added for a better mobile app experience such as image recognition, face detection, and speech recognition.

**Introduction**

UX design stands for user experience design and its focuses on any form of interaction between users and everyday products and services, such as websites and mobile applications. UX design is very important because when you create an application, you are also creating an experience for the user and that experience will be one of the main factors of how successful your product is as it determines user loyalty.

The three most important factors in UX as developers are creating a new product is that it needs to be useful, easy to use, and desirable. By adding technology that makes the user's lives easier the developer is increasing the usability of an application. In today's competitive market, Artificial Intelligence and machine learning have become a topic of exploration and growth in the business industry. AI is helping the Mobile app developers to make the cut-throat competition with a hassle-free process for users.

Artificial intelligence is an old concept that has been studied for years in computer science and explored by pop culture. From a technical perspective, AI is "The ability of a digital computer or robot to perform tasks commonly associated with intelligent beings". (Encyclopedia Britannica) So basically is the ability to copy human behavior and make autonomous decisions.

AI is also about pattern recognition, for example, AI can recognize patterns in data, words, phrases, and images. In today's competitive market, Artificial Intelligence has become a topic of exploration and growth in the business industry. AI is helping the Mobile app developers to make the cut-throat competition with a hassle-free process for users.

There are two different types of AI: strong AI and weak AI. Strong AI is "The idea that a computer can be made or raised to intelligence levels that match human beings" (Faggella ) A good example is the ability of a machine to play chess, solve puzzles. Self-driving cars are also strong AI because it needs to be able to make an autonomous decision on the spot. On another hand, weak AI is "The idea that computers can provide features that mirror or mimic thought or thinking processes." (Faggella) Weak AI programs are responding to a user's need with a programmed solution and are limited to the data provided by the application. Some examples of that concept are virtual assistants, content recommendations, and optimized search. In this paper, I will explore the weak AI technologies that can be added as well as some machine learning methods.

**Technical**

When deciding what AI technology or Machine Learning feature you want in your mobile application, it should be taken into consideration how you can enhance the user experience and make repetitive processes easier. Some common ways to utilize AI are by adding face detection, speech recognition, image recognition, predictive analytics, and chatbots.

Face detection is a secure way to authenticate users by setting up a face id or biometrics. It has the power of making the login experience more efficient and user-friendly and it can be used for app login, mobile payment authorization. There are many different ways to implement

for iOS and Android phones. On iPhone apple offers a framework called local authentication and they provide an easy-to-follow tutorial. While on Android devices there is a biometrics library on Android studio.

Speech recognition is the ability to automatically and accurately recognize human speech. For example, Siri and Google Assistant decode and convert human speech into a format that the phone understands. This can help with accessibility for apps. Overall this feature can be used for voice search and audio to text messaging. This feature can be added by using the speech framework by apple or the SpeechRecognizer library on android and Google Cloud Text-to-Speech API.

Image recognition is the ability to identify objects, places, people, writing and actions in images. It's very helpful to minimize user input and it's constantly used by applications that need to verify or documents. Like a banking app can use for check deposits, adding credit cards, and an insurance company can apply this feature for document scan and driver's license verification. Image recognition is one of the hardest features to implement since it may require model creation and training. There are also libraries with existing models like OpenCV, a is a popular machine vision library that has thousands of algorithms to process and analyze images.

Predictive Analytics is based on the user's likes, technology can study user behavior and their pattern to provide them with exactly what they are looking for. It provides better app personalization and draws deep insights about users. Its been constantly used by many popular applications like Netflix, Youtube, Instagram, and any other company that recommends content to users. The first step to implementing predictive analytics is by defining the required business result, and then all the necessary data needs to be collected; the more data collected the better is

the prediction, the data also needs to be prepared before using a predictive analytics tool, and the last step is validating and check if the model works.

Chatbots are computer programs able to conduct conversations with human beings through a messaging interface. It eliminates the need for phone customer support over common questions. Many companies use chatbots to answer common questions, initiate insurance claims, make payments or direct the user to customer service. On iOS, chatbots can be implemented by using Swift or Objective-C. On Android, the developer needs to create an agent through Dialogflow or Kommunicate.

**Conclusion**

There are many different technologies that can improve the user experience of an application. Each AI feature that was mentioned in the paper can help companies grow their business and retain loyalty. An analysis should be made before considering implementing any new feature and a business strategy should be planned before investing in AI.

## References


"Artificial Intelligence." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., www.britannica.com/technology/artificial-intelligence.

Faggella, Daniel. "What Is Artificial Intelligence? An Informed Definition." *Emerj*, Emerj, 21 Dec. 2018, emerj.com/ai-glossary-terms/what-is-artificial-intelligence-an-informed-definition/#:~:text=AI%20Semantics%3A&text=Strong%20AI%20%E2%80%93%20Also%20known%20as,levels%20that%20match%20human%20beings'.

Hartt, Martin. "Adding Voice Control to Your Projects." *Medium*, Hackers at Cambridge, 13 Feb. 2018, medium.com/hackers-at-cambridge/adding-voice-control-to-your-projects-7096fdee7c45.

"How to Use Predictive Analytics." *GetApp*, GetApp, 19 Jan. 2021, www.getapp.com/resources/how-to-use-predictive-analytics/.

"Local Authentication." *Apple Developer Documentation*, Apple, developer.apple.com/documentation/localauthentication/.

Mobindustry. "How to Integrate Machine Learning into an Android App: Best Image Recognition Tools." *Medium*, Medium, 28 Feb. 2019, medium.com/@mobindustry/how-to-integrate-machine-learning-into-an-android-app-best-image-recognition-tools-1ba837c27903.

"Show a Biometric Authentication Dialog : Android Developers." *Android Developers*, Android Studio, developer.android.com/training/sign-in/biometric-auth.