

Question 1

The similarities are that both of them are given text and try to find out the intention from those text. The differences are that contextual ads are much more text, less focused, and less intentional.

Question 2

Click-through rates (CTRs) is a lot lower for contextual ads than web-search ads. Main reason is there is less intention for contextual ads. That causes lower conversions and more difficult to place the ads.

Question 3

1. Because the language and topic of Web pages and ads can be different, intersection of the vocabularies of related pages and ads can be low.
2. Adding expansion terms to Web pages to reduce the vocabulary impedance.
3. Because the two additional sources of evidence, expansion terms and pages pointed by the ads, are distinct and complementary, providing extra and valuable information for matching ads to a Web page.

Question 4

Part 1:

1. Shopping and fashion: $8/20 = 0.4$
News and entertainment: $10/20 = 0.5$
Business and industry: $10/20 = 0.5$
2. Mobile network or device users: correct
WiFi users: correct
Recent mobile network or device change: correct
Potential mobile network or device change: not correct
 $3/4 = 0.75$
3. As a whole, my interests are less accurate than my categories. For my interests, I have those entries basically because of my activity on Facebook, for example clicking on one of their ads. The correct entries are mostly the brands of those ads that I clicked. Most wrong entries seems to be some categories of those brands which I may not literally be interested in. For my categories, Facebook seems detected the device that I use to browse it, and it also detected my mobile carrier.

Part 2:

1. The minimum potential reach I achieved is 11,000 people. First, I narrowed down to 18,000,000 people by setting location to Taiwan. Secondly, I further narrowed down around $1/3$ to 6,200,000 people by setting age from 18 to 30. Thirdly, I set the gender to men only and cut off half of the audience to 3,000,000 people. After that, I set the demographics to people studied at National Taiwan University and the potential reach is 12,000 people. Finally, setting audience that also have interests in music and got the minimum potential reach to 11,000 people. In narrowing down the audience, demographics are the most helpful feature. Location and age are certainly easier to set up, and they won't get wrong.
2. Because the potential reach is 11,000 people and is relatively small, I think it is highly likely that my friend will see the ad. The features I set such as location, age, and gender can be easily access by Facebook and they won't get wrong. Because my friend have added National Taiwan University to his education field, he is likely to include in the demographics. Even though the accuracy of interests is low, it did not narrow down the audience too much, only 1000/12000 portion of the audience. Therefore, most people have interests in music, and my friend is likely include in the potential audience.