Name: **Net ID:**

CS 598tar Midterm Exam (20 points)

Please work on the following questions independently. The exam is "open book". In other words, you may (and are encouraged to) use your notes, class slides, reading list, and Internet resources. Please print this sheet and return no later than Friday, March 30.

Note: Many of the questions below ask you to identify a paper. You may do so by writing the title only. No need for full citation.

Q1: "Fake news" is a problem identified recently on online media. Name three papers on your reading list that offer solutions that can help mitigate this problem. **(3 points)**

Q2: You are hired to help a large university campus reduce its total energy footprint. You notice that among the sources of excessive energy consumption is a fleet of garbage trucks that regularly visits a large number of garbage collection bins, scattered at different campus locations, to collect garbage. Which paper on your reading list can help reduce the total energy consumption of the garbage collection service? **(1 point)**

Q3: Tornadoes are a big problem in your home town. You decide to start a new crowd-sensing service on top of Instagram that offers updates on live Tornado sightings by collecting pictures people take of tornadoes in real-time and using them to localize the tornado. Which paper on your reading list can help you eliminate false positives in your service (i.e., false detections of tornadoes at locations where there are none)? **(1 point)**

Q4: A friend of yours argues that one can often tell whether a person will be hired or not simply by watching their "body language" during their interview (without actually hearing the interview conversation). Can you name a paper on your reading list that supports this opinion? **(1 point)**

Q5: In the paper you cited for Q4, what observed feature was deemed the strongest predictor of interview outcome? **(1 point)**

Q6: You would like to build a crowd-sensing service that asks users to report their estimates of attendance of various events at a local concert venue. According to the reading list, what would yield better results; asking for an estimate of the number of attendees present, or asking for an estimate of the percentage of seats occupied? **(1 point)**

Q7: Name a paper on the reading list that supports your answer to Q6. **(1 point)**

Q8: A classmate of yours decides to write a paper on localization, where the locations of objects in a room are inferred by using two projectors, each projecting a color pattern onto the room. By observing which color patches an object sees from each projector, the location of the object is determined. Which paper on your reading list should your classmate read in order not to "reinvent the wheel"? **(1 point)**

Q9: Name a paper on your reading list that uses expectation maximization as a way to estimate *user bias* in reporting quantities measured by integers or real numbers (as opposed to quantities that are given by Boolean variables)? **(1 point)**

Q10: A friend of yours wants to develop a smartphone-based system that encourages individuals with alcohol abuse problems to stop drinking by having them take a daily test and giving them reward points for staying sober. Which paper on your reading list would you recommend for your friend to read? **(1 point)**

Q11: Name two papers on the reading list that are motivated by helping owners of physical (i.e., "brick and mortar") stores improve their retail revenue. **(2 points)**

Q12: You decide to use Twitter as a way to estimate people's attitudes towards controversial issues in ongoing debates by counting the most vocal supporters of each side. Name a paper on the reading list that offers a useful algorithm to address this problem. **(1 point)**

Q13: According to the reading list, when (i.e., approximately what year) did the idea of using people's phones as sensors get first introduced? **(1 point)**

Q14: You are developing a system that is able to determine which of a group of people are participating in the same conversation by collecting data from their smartphones. Name a paper on your reading list that offers an idea for how to solve this problem. **(1 point)**

Q15: Name three papers on your reading list that localize physical events or landmarks using geotagged entries on social media. **(3 points)**

Good Luck.