

17-562, 17-662, 17-762 Law of Computer Technology. Prof. Shamos
MiniHomework 0. Due Tuesday, September 5, 2023, 11:59 p.m.

This homework is worth 40 points (out of 600 points for homeworks in 17-762, 400 in 17-562 and 240 in 17-662). Its purpose is to familiarize you with the kind of homework you will be getting in a setting allowing you to practice without your course grade being unduly affected. You have one week for this homework – you will have two weeks for subsequent homeworks.

Homework policy: You may (and are encouraged to) work with other students on homework assignments provided that (1) each person's written submission is theirs alone; and (2) you identify on the homework each person with whom you worked in connection with the assignment. For example, you may work in pairs or groups to research, discuss and debate the homework, but then each person must go off and write their own paper. HOWEVER: you may NEVER hand in work of another person even if you state that you have worked with that person. If you quote or paraphrase from external sources, such as web pages, ChatGPT, or another person, you MUST use quotation marks to identify the quotation and must cite the source of such material. Violations of these rules will be dealt with according to University policy. Generative AI systems are regarded as a "person" and you must list any such system as one of your collaborators.

It is very useful to work in groups. Students produce better work when they can share ideas with colleagues and receive feedback. The objective of the course homework is to promote learning, not merely to serve as a grading mechanism.

Homework must be submitted through CMU Canvas as a Microsoft Word file (.doc or .docx) having a filename containing your name. PDF files are not acceptable because it is very difficult to add comments to them.

You must ALWAYS explain your answers. Failure to do so will result in a ZERO for the question, regardless of your answer. You should realize that there are no single "right" or "wrong" answers to the homework questions. The fact patterns are realistic but artificial and have never been decided by any court, even though they may be similar to those of actual cases. You will not find the homework scenarios on the Internet. They were constructed for the purposes of this course. However, the legal citations and statutes are real. The fact that a court may have decided a similar case in a particular way does not make that decision the "right" answer. Your grade will depend on the degree to which you follow the methods taught in the course for analyzing legal scenarios and arguing your position.

The homework requires thought. You will need to decide which facts are relevant and which are not. **DO NOT USE YOUR PERSONAL SENSE OF JUSTICE TO DECIDE WHICH WAY THE CASES SHOULD TURN OUT. How YOU feel things should be resolved is COMPLETELY IRRELEVANT.** You MUST apply the principles of legal reasoning discussed in the course. You will find it impossible to write effective answers to these questions if you wait until the last night before the homework is due. Your answers do not need to be long but they must be thorough.

If you find that there is some factual information you need that is not stated in the question, make a reasonable assumption about that information and state and justify your assumption.

Question 1. Police Use of Facial Recognition [40 points]

Vermont is the only U.S. state that prohibits law enforcement from using “facial recognition technology.” Words in red are quoted literally from the Vermont statute:

Moratorium on facial recognition technology 2019, No. 166 (Adj. Sess.) § 14¹:

(a) Until the use of facial recognition technology by law enforcement officers is authorized by an enactment of the General Assembly, a law enforcement officer shall not use facial recognition technology or information acquired through the use of facial recognition technology unless the use would be permitted with respect to drones under 20 V.S.A. § 4622 (law enforcement use of drones).

(b) As used in this section:

(1) “Facial recognition” means:

*(A) the automated or semi-automated process that identifies or attempts to identify a person based on the characteristics of the person’s face, including identification of known or unknown persons or groups; or
(B) the automated or semiautomated process by which the characteristics of a person’s face are analyzed to determine the person’s sentiment, state of mind, or other propensities, including the person’s level of dangerousness.*

(2) “Facial recognition technology” means any computer software or application that performs facial recognition.

(3) “Law enforcement officer” has the same meaning as in 20 V.S.A. § 2351a.”

You may ignore the “drones” provision, as it does not apply to this question. You are informed that the General Assembly has not granted permission for facial recognition technology to be used. “V.S.A” is an abbreviation for “Vermont Statutes Annotated.”

You are to apply this statute to the following set of facts, which you are to take as true:

1. Bob Boozer broke into a liquor store at night in Burlington, Vermont, the state’s largest city, and stole items valued at \$1200. The store had a video surveillance camera that got a good image of Bob. The store owner gave the video to detectives investigating the burglary.
2. Vermont has a computerized database called MugBase containing photos of everyone who has been arrested in Vermont in the past 20 years. Bob’s photo is in MugBase.

¹ If you try to find this statute at “Vermont Statutes Online,” you won’t succeed. It is law, but it has not yet been added to the codified statutes. “Adj. sess.” means “adjudicative session,” i.e., a lawmaking session of the legislature.

3. Detective Carl Catchem, who is a “law enforcement officer,” made a still image of Bob from one of the frames of the video and used a search function of MugBase to find photos of people who looked like Bob.
4. The MugBase search function matches photographs based on old “Search By Image” code developed by Google and described in “Up Close With Google’s Search By Image: Hits, Misses & More” (2011), which you should read [here](#). The document emphasizes that “Search By Image does not use facial recognition.”
5. When Catchem ran the query, there was only one hit: Bob Boozer. Catchem obtained an arrest warrant, went to Bob’s house, and arrested Bob, who was charged with burglary under 13 V.S.A. § 1201. (Assume that § 1201 applies to Bob’s actions – you don’t need to look it up.)

Bob lawyer asks the judge to dismiss the charge because Catchem used information (Bob’s identity) acquired through the use of facial recognition technology. Assume that, if Bob’s lawyer is correct, then the criminal charge must be dismissed because there is no other evidence that Bob committed the burglary. The ONLY question you must decide is whether Search By Image in MugBase uses “facial recognition technology” as defined in §14(b) of the statute.

(A) Bob’s lawyer argues that Search By Image is based on “characteristics of the person’s face” because the image used in the query contained only Bob’s face and MugBase contains only faces. Therefore, Search By Image uses “facial recognition technology,” or it would not have been able to identify Bob from his face alone.

(B) The prosecutor argues that Search By Image does not use “facial recognition technology” because it is not “based on the characteristics of the person’s face.” Search By Image does very well with flowers, buildings and mountains, none of which have any relation to faces, so clearly no facial recognition technology is used.

Question 1(a) [30 points]. Evaluate both arguments A and B, comment on them, decide whether Catchem used “facial recognition technology,” and explain your answer fully. A simple YES nor NO will receive NO CREDIT (0 points). Note that is it easy to be convinced by either argument A or argument B. Law is often like that. A full answer will probably require 1-2 pages.

Question 1(b) [10 points]. Write a critique of the statute’s definition of “facial recognition.” If you find it deficient, craft your own better definition. If you like the definition, it’s not enough to say it’s OK – you need to explain why.