Professionalism and ethics for ICT students

Welcome to this module on professionalism and ethics for ICT students. My name is Gerald Maguire, and I developed this material in cooperation with my colleague Dr. Ellen McGee, a retired professor from Long Island University.

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The goals of this lecture are to raise your awareness of ethical issues and to introduce you to some ways of reasoning ethically and to give you some practical guidelines for resolving ethical dilemmas.

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So the first question is: What is ethics. Ethics is the study of morality, good and bad, right and wrong, human conduct and behavior in a moral sense and moral issues. When thinking about ethics, we reflect on what kind of person we should become and what are our reasons for living, and at some point we make decisions and ethics guide us in how we decide what is the right thing to do.

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Ethics is not equal to law. Ethics are the study of the standards of conduct and moral judgment while law concerns the rules that are applied to the conduct. Laws are established and enforced by authorities, legislation, customs, or given community or other groups.

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Computing technology ethics is a branch of applied ethics. It deals with professional responsibility for computing professionals and application of norms and codes of ethics in decision making. James Moor defines computing ethics as ``the analysis of the nature and social impact computer technology and the corresponding formulation and justification of policies for the ethical use of such technology''. Where computer technology includes hardware software networks and computers. Now, this is a view that basically says that it is very important that we are thinking about the fact that this computer technology has an impact on society and this impact is not always positive. Therefore we have to think very carefully when we apply computer technology, as we would like to make sure that we have a positive impact.

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Now, ethical issues about ICT are not new. Norbert Wiener, professor MIT, already in 1948 when he coined the term cybernetics and wrote his book Cybernetics or control and communication in

the animal and the machine emphasized the importance of ethical consideration as soon as we begin to think about computers that are acting autonomously, But he also went on in 1950 to write a book called The human use of human beings: cybernetics and society where he looked at the fact that once we have these computational devices and systems and have humans interacting with them, we end up with a complex set of problems about the behavior when the two are going to interact and finally his book God and Golem, Inc. a comment on certain points on how cybernetics impinges on religion - where he goes further looking at some of the religious elements about cybernetics. In 1947 Norbert Wiener wrote an article called ``A scientist rebels'' and describes why he declines to provide information regarding his earlier work done during World War II on controlled missiles to John Foresight of Boeing because he believed that it was important not to encourage the production of guided ballistic missiles. One of his ways of discouraging that was to say that no he would not make this research available even though he'd previously made it available to the government he chose not to make the information available, and he basically said it's out there if you can find it you can use it, but I'm not going to help you find nor give it to you.

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Walter Manner introduced the term in 1976: computer ethics, and he believed that computers were special technology and raise special ethical issues; hence computer ethics deserve a special status. He describes six levels of justification for the study of computer ethics and he said basically we should study computer ethics because doing so will make us behave like responsible professionals, doing so will teach us how to avoid computer abuse catastrophes, the advance of computer technology will continue to create temporary policy vacuums because the technology advances faster than the politicians and lawyers can construct laws to describe what should and shouldn't be done. The use of computing permanently transforms certain ethical issues to such a degree that their alteration requires independent study so things that used to be done manually now being done by computer may radically change whether we consider it to be ethical or not or how the result of that should be if you were made available. Use of computing technology creates and will continue to create novel ethical issues that require special study, so the technology itself is creating new issues how do we deal with those no issues had not been thought about and that don't match previous ethical issues that have been discussed, debated, and researched because the new technology has enabled something new which wasn't expected and the set of novel transformed issues is large enough and coherent enough to define a new field. He says these basic six reasons are why we need the field and the study of computer ethics.

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In contrast, Debra Johnson, who published the first textbook on computer ethics, says computers pose new versions of standard moral problems and moral dilemmas exacerbating the old problems and forcing us to apply ordinary moral norms in uncharted realms. There's a newer version of this textbook available from 2009. She's basically taking the point of view that: yes, computers have changed the situation, but they don't actually introduce new moral problems - they are same moral problems that we've had before -- they're just exacerbated because of what computing is done, and therefore we're

going to apply the ordinary moral norms, but we don't exactly know how to apply them because we don't know how to map them on to this new domain that computer technologies introduced.

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Paul Mason in an article called “The end of capitalism has begun” described what he calls postcapitalism and in his attempt to build a framework to understand the dynamics of an economy based on abundant socially-held information, he writes that information technology has reduced the need for work, blurred the edges between work and free time, and loosened the relationship between work and wages. This is a very fundamental change. He goes on to say further that information's corroding the market's ability to form prices correctly, and this is because markets are based on scarcity while information is becoming abundant. So if the value of this information was very high before, what is the value of the information now when it's readily available. Third, the spontaneous rise of collaborative production of goods, services, and organizations are appearing that no longer respond to the market and managerial hierarchy. So people are doing things, making goods, creating services, and even organizations - simply because they want to - not because there's a market justification for it. We see with the rise of social networks, whether it be Facebook or others, that there's a value in this collection of information and value in the interaction via the social network, but there wasn't a traditional market value that would have motivated the creation of such networks in and of themselves until they started to exist with very large numbers of users.

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So an important question you have to ask yourself is what do you value and many of those values: being popular or rich, successful or powerful, or whatever. A difficulty is sometimes these values preempt the moral - as I would prefer to be rich rather than doing the right thing - no, that's not what I should do, so I have to balance these things. I have to say no, I want to do the right thing yet/but I know it's going to cost me something or I may be less popular because I think that I should do this because it is the morally correct thing to do.

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James Rest has a four-component model where the first component is moral sensitivity, and that is, you have to be sensitive to the actions of their outcomes, which means you recognize that there's an ethical problem. The second component is moral judgment is it morally right. Is it obligatory? I should do this. I must do this. A third component is moral motivation. I'm motivated to do it because I think it's the right thing to do. And then, of course, the final and fourth very important component is moral character. I implement. I actually go and do it. I decided that there is an ethical problem I decided whether it's the right thing to do or whether I must do it. I'm motivated to do it because I believe that it's the right thing to do, and now I close the cycle by actually doing it. So behaving morally requires effectuation of each of these processes and the execution of the entire ensemble, which means, of course, that it can fail at

any one of these points. I say - yes, it's the right thing to do, but no, I'm not going to do it. Then oops! I failed to behave morally.

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So now, let's take a look at applying ethics to look at dilemmas. There are two basic kinds of dilemmas. The first and most common is you know what to do, you just don't want to do it - it's inconvenient. want to do it, it's inconvenient I'd rather do something else. That's the first dilemma. What do you do? And the second dilemma is there is a conflict of principles. This is much less common, but it does occur, and you'll probably experience in your life where you say: Actually - I shouldn't do that, and here is the moral reason why I shouldn't do that. And if I don't do that, however, it may cost me my job. So I have to ask myself will I act morally and not do it and therefore know that I'm going to give up my job or I will act in a not moral fashion to keep my job.

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Now there are various approaches to decision making based on different ethical theories. One approach is utilitarian or consequence-based - Is I do it because of the consequences if I don't do it. I will be arrested if I don't do it. I will be fined if I don't do it. I will be punished. Or, if I do it, I'll be richly rewarded. Another approach is the so-called obligation based or deontological. I do it because I have an obligation to do it. I've sworn that I will uphold the law when I took a particular position as an officer, or as the president, or in some other office. Or character-based, and that's based upon virtue. I believe it's the right thing to do; therefore, I am going to do it. And therefore, I am going to make decisions on it - based on what I believe is the virtuous decision.

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Beauchamp and Childress, in their book on biomedical ethics, say that there are a set of four basic principles for ethical analysis. The first of them is non-malfeasance - we should cause no harm. It also means we should cause no unnecessary risks. The second is we should think in terms of the beneficence. We have a duty to do good. The action is done for the benefits of others, and many of us know that as the golden rule. The third is respect for autonomy. We respect people's decisions and their values. And justice is to treat all cases alike. It also means in many cases, we need to distribute the benefits and the burdens in a fair fashion. It's important to note that in terms of harm - it can range from physical and emotional injury to actually depriving someone of property or violating their rights. So it's very, very important as we see in the Hippocratic Oath and many others you have studied. The Hippocratic oath that says first do no harm. And all of the physicians who take the Hippocratic Oath know it begins with do no harm;

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however, there are some difficulties in reconciling these principles. Beneficence requires the professional to promote the good of the client, what's best for the client. while autonomy says: you have to respect the client's autonomous decisions and actions. So yes I can say do this, and it's good for you and I can say yes and here are the reasons why it's good for you. However, if you choose not to do that, then I have to respect your decision and not try to force you to do something which you choose not to do. So with respect to people's decisions, it is very important to understand that informed consent requires competence. They must be competent to be able to make the decision. Disclosure - you have to properly disclose what it is that they're going to be making a decision about. Comprehension - they have to understand what it is that you're wanting them to make a decision about, and it truly has to be voluntary. It can't be coercive, and it can't be done because you promised them a lot of money et cetera. So we need to think in terms of balancing beneficence and nonmaleficence, which means we have to balance between benefits, which is the beneficence. And risks, the possibility of harm, to ensure that we do not commit nonmaleficence.

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Today a popular type of design is called value-sensitive design. And it's based on the assumption that design in the design process is not neutral but, in fact, has values in it, and therefore we refer to it as a value-laden. So the result is we have to consider the social and ethical values when we're designing something. And van den Hoven says value-sensitive design provides us with the opportunity to deal with these ethical issues in a new and fresh way by front-loading the ethics and by means of proactive integration of ethical reflection in the stage of design of architecture requirements, specification, standards. protocols, incentive structures, and institutional arrangements. So as you think about designing your system or if you think about the requirements or specifications or which standards or protocols you're going to use. You have to think about what's going to be the social or ethical issues that this choice is going to cost and reflect on that before you make that part of your design decision.

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Now they're also a number of rules that you may need to be aware of, and again CODEX has a very extensive collection of rules and guidelines at the URL shown on the slide. But the three basic rules concerning confidentiality - the duty to respect the privacy of the information that you receive from others. Fidelity - the duty to keep one's promise or word. And honesty - to not deceive others. Generally, there are laws that are relevant to all of these, especially in specific settings. So in the case of medical settings, often there's a duty of confidentiality. You can't disclose someone's medical conditions, but at the same time, you may also have an overriding duty to disclose this if it would represent a potential risk to society. So you're going to potentially face dilemmas in even trying to apply these three simple rules.

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Now the computer ethics institute has described ten commandments. Starting with, of course, thou shall not use a computer to harm other people. All the way through to thou shall always use the computer in ways that ensure consideration and respect for your fellow humans. And you can read through these on your own, but the important thing is to read them and so ingrained in your own thinking. What does this mean? What does it mean about my behavior? What does it mean I should and shouldn't do?

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And part of the reason for that is as professionals, you have a professional responsibility, and of course, there are three spheres of your professional responsibility. Your responsibility to the group you may be a part of and your responsibility to society, and this is reflected in the choices you are going to make. How do you choose which projects you are going work in? You [must] understand that accepting working on this project means I can't accept and work on these other projects, so what's the value in that. Yes, this project might be very interesting, but this other project might have a very very high value, for instance, to my group or all of society. Does the project even benefit society? Or does the project have a negative benefit for society? In which case, I may have a professional responsibility to say: No, I'm not going to be involved in it. And a question that's often asked is technology-neutral. Many people view technology as having both positive benefits and negative problems, but do you think about those as you make your decisions? Are you neutral in the choices that you make? Most of us have some biases, but we also have an obligation as a professional to be able to say: yes, I may have a personal bias, but I need to make sure that my personal biases don't reflect negatively on the set of things that I do as a professional.

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Lots of professional organizations have codes of ethics, and these are basically standards that members of the group take voluntarily and are binding upon themselves. Now, why do organizations have codes of ethics? Well, one of the reasons is that they wanted to define the expectations that the profession has of a practitioner. Now the goal in many cases is actually to change the culture [as] they want people to make choices in a better way, to be more ethical in their choices, to reflect more upon what the social, societal, environmental sustainability et cetera aspects of their choices are. And, therefore, to guide them in their actions, both action and inaction. Many societies have a binding code of ethics to raise the level of professionalism in their society in terms of the particular organization, and another important factor is it's a collective recognition of the responsibilities. So as you'll see later in the IEEE code, it says "we," and it begins with "we" because the idea is that it is our collective responsibility as professionals to carry out this code of ethics. But codes of ethics are also aspiration - that is, we hope this is what people will do. Some are regulatory - the regulations demand that everyone do some specific thing. Or it might be educational: Why must one do X. The nice advantage of a code of ethics is that sometimes it can actually give you guidance because you can read the code of ethics and say "aha" - now that I've read it, I've become educated, and I know that I should act in this particular way.

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There are a variety of different codes that might be applicable to you. One of these is the Association for Computing Machinery's (ACM) code of ethics and professional conduct. Another is the Institute of Electrical and Electronics Engineers (IEEE) code of ethics. Or the British Computer Society (DCS) society DCS or the international or the International Federation for Information Processing (IFIP), and many many others. But you should read some of these, and you should understand which of these are going to be applicable to you because you might be a member of the society or because you might want to become a member of one of these different organizations.

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As I mentioned earlier, the IEEE code of ethics begins with "we": we the members of IEEE in recognition of the importance of our technologies in affecting the quality of life throughout the world and in accepting a personal obligation to our profession its members and the community we serve to commit ourselves to the highest ethical and professional conduct and agree ... And then it goes into a set of things that "we" agreed to as a part of being a member of this organization.

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Dahlbom [and Mathiassen] in a 1994 article gave a Scandinavian view of ACM's code, and one of the interesting things that he [they] point out is that in Scandinavia, at that time, ethics played a rather minor role in professional discussion. It wasn't a big topic of conversation among people working in computing in the nineties. But three Swedish trade unions associated with computing personnel did agree to a set of rules for computer professionals. And in the intervening years since the nineties until today, there has been much more of an emphasis on understanding how we as professionals should conduct our activities and carry out our responsibilities.

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Now there are two cases of problems. One is dilemmas (which we mentioned earlier), and those are generally situations that involve some conflict of values. They require judgment and/or virtue to decide should we do it and show the courage to do it. And the other [type of] ethical problems and here typically most of us will experience them in terms of the organization we are in. The organization is taking some action or planning to take some action, and we need to understand the problem and the policy, and we need to make sure that we know how we're going to respond- What the appropriate manner of handling these ethical issues that we encounter and how do we address them.

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This means we need a framework for ethical decision making, and that begins with getting the facts. Once we have the facts, you need to explicitly state the problem, then identify the stakeholders and

now understand where is the moral issue in this problem. Then we need to evaluate the alternatives from a moral perspective, and finally, we need to make a decision and not written here is the fact that in the end, we also live with the effects of making that decision. And we have to understand that as part of our reasoning about what decision we're going to make.

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So when we're dealing with the specific case, my colleague Ellen McGee suggests that we develop a list of at least five options. And the idea is we want to avoid the dilemma, so rather than simply saying yes or no, we want to consider who we should go to and what we should say. So rather than having ourselves to simply say within ourselves yes or no I should consider who should I report this to and what should I say to them if I say anything or perhaps I can reformulate as I reduce my set of options in terms of first a harm test will executing this option do more harm than any alternative, and that, of course, requires that we identify the stakeholders. A publicity test - would I want my choice on the front cover of this afternoon's newspaper. The defensibility test - can I defend my choice before a congressional committee or before a committee of my peers or if you are a young person before your parents. Reversibility test - if I were to be involved in this problem and were adversely affected by it, would I still make this choice. The virtue test - what would I become if I choose this option. Frequently, is it the right thing to do. Is that the kind of person I want to be? A professional test - what might my professional ethics committee say about having chosen the option. Or a colleague test - what would one of my colleagues say when I described my problem and suggest this option is my solution. Or an organizational test - what would the organization's ethics office or legal counsel say about my choosing that particular option. By considering the set of tests, hopefully, you can develop a set of five options, and you can decide which of these is what you're going to choose to do.

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Now one of the things that can help you is that many organizations and many countries have ethics committees. They're very useful because they're going to concentrate on a particular problem, and the goal is to, of course, fulfill the ethical goals to do no harm, to do good to others, to respect other persons, and to do justice. You don't have to do all of these things alone - there are ethical consultants whose advice you might seek to help you decide what it is that you should do or what it is you should choose not to do.

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Today, a very complex area is cybersecurity, both cyber defense and cyber offense, and of course, the issue of liability for cybersecurity. Who is responsible if someone breaks into the system that you have developed and is able to access information, but they shouldn't have, and that might, in fact, cause harm to individuals or violate the privacy of individuals or might even, in fact, lead to the collapse of your economy or your country being overrun by others. This, of course, raises questions about what's

your professional responsibility for the security of the artifacts, products, [and] systems that you develop. What steps should you take to automatically defend these artifacts, products, and systems against attack? So should they simply throw up a wall, or should they go on the offense? Should you personally choose to engage in cyber attacks and cyberwarfare? You might be faced with this problem if you were doing your military or governmental service or if you're directed to do so by the government. On the 21st of July of 2015, the Seventh U. S. Court of Appeals ruled in the case against Neiman Marcus group (a large store chain) over cyberattack, saying that in fact, they had a cyber liability. So they actually were potentially criminally and civilly responsible for the damage that was caused to the credit and information of their customers that was lost in the cyberattack against the company.

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Another question that you might encounter in your life is being a whistleblower. Whistleblowing basically involves exposing wrongdoing either externally to lawyers, the media, law enforcement, watchdog agencies, or to local state or federal agencies or internally. When internal, report it through my organizational channels to record and report things that are wrong. But there's an ethical dilemma in whistleblowing because on the one hand, as I may have a loyalty to my organization but I also have a loyalty to my clients or society, and of course, I have my own integrity that I have to consider so could I live with myself if I didn't report this wrongdoing.

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There are various reactions to whistleblowing. Some of the positive reactions are whistleblowers are sometimes considered selfless martyrs because they consider the public interest and organization accountability, and therefore they reported about this wrongdoing. So the reactions to whistleblowing could be positive, the whistleblower could be considered a selfless martyr for considering the importance of bringing the issue out and insisting that organizations be accountable. Unfortunately, there are also negative responses. Whistleblowers are often considered snitches. They lose their job, and they are unable to get another job. They may end up isolated. The organization may stonewall them, even question the person's mental health. They [the employer] may or may not provide a generous severance package. They may harass the individual who made the report, and there may even be a criminal conviction. So think of whistleblowers, such as Edward Snowden, and think of the risks that he has, on the one hand, reporting these things that he believes to be wrongdoing; while on the other hand potentially having to spend the rest of his life outside of the reach of the US government lest he is criminally indicted for revealing information that was classified.

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Now Richard de George has a set of criteria for whistleblowing. And he says that we can split this into two categories: the morally permissible and morally obligated. In the morally permissible, he says that we have to consider that - yes, we should report if the product/policy/action would do serious and considerable harm to either the employees or the public. He said that once the employee notices this,

they should report it to their immediate supervisor. If the supervisor doesn't do something effective, then they should take it all the way up to the top of the firm, including potentially to the board of directors. On the other hand, we have the morally obligatory - that is I have concrete evidence that an impartial observer would view this product or policy posing a serious or likely the danger to the public or the user because of using the product - in which case the employee must have good reasons to believe that by going public the necessary changes can be brought about and the chance of being successful will be worth the risk one takes and the danger to which one is exposed and only, in that case, does he say: yes, it's morally obligatory that you should whistleblow otherwise you should keep it within the company. There is a balance between loyalty to the company and the loyalty to society and your obligations to society.

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So, in summary, while it may not be possible to find an absolutely correct answer to dilemmas because with a conflict of values, there will always be regrets. Some solutions are better than others. And at the same time, some responses are clearly wrong. I hope that you found this material to be valuable and interesting and hope that you find that throughout your life that you will be able to find your way to do what you believe to be the correct, right, and moral.