CS 4873-A: Computing, Society & Professionalism

Munmun De Choudhury | Associate Professor | School of Interactive Computing

Week 1: Introduction
January 18, 2021

Significance

What is ethics?

Out in the desert you are driving. You can see in all directions for miles. No one else is around. Do you stop at a stop sign? Why or why not?

The Stop Sign

Revisiting "what is ethics"

↗ Ethics is the field of study that is concerned with questions of value, that is, judgments about what human behavior is "good" or "bad" in any given scenario.

↗ Ethics are the standards, values, morals, principles, etc which are used to base one's decisions or actions on; often there is no clear "right" or "wrong" answer

Discussion Point: Free speech and cyber harassment

↗ Should cyberbullying be a criminal offense?

  ↗ three reasons why it should be.

  ↗ three reasons why it should not be.

Some Case Examples We Will Consider in the Class Going Forward

↗ Algorithmic bias

   ↗ Amazon's hiring tool

↗ Privacy

   ↗ "Always on" Internet of Things (IoT) devices

↗ Governmental surveillance

   ↗ Public surveillance in China

↗ Technology and power

   ↗ The Facebook emotion contagion study

Difference between legal and ethical

Examples

➶ *Illegal but ethical:* Civil disobedience against unjust laws during the Civil Rights Movement; letting someone else use your prescription asthma inhaler when they are having an attack; euthansia

➶ *Legal but unethical:* Lying to boss to take a sick leave because you have to take care of your kid; speaking against government in authoritarian regimes; same sex marriage laws in some countries

➶ *Both illegal and unethical:* murder, sexual assault

Next Class

↗ Materials and readings on the class website – The Therac-25 controversy

↗ Try to identify three things:

   ↗ People: who was involved? what did they do? what might they've done differently?

   ↗ Policies: government; corporate

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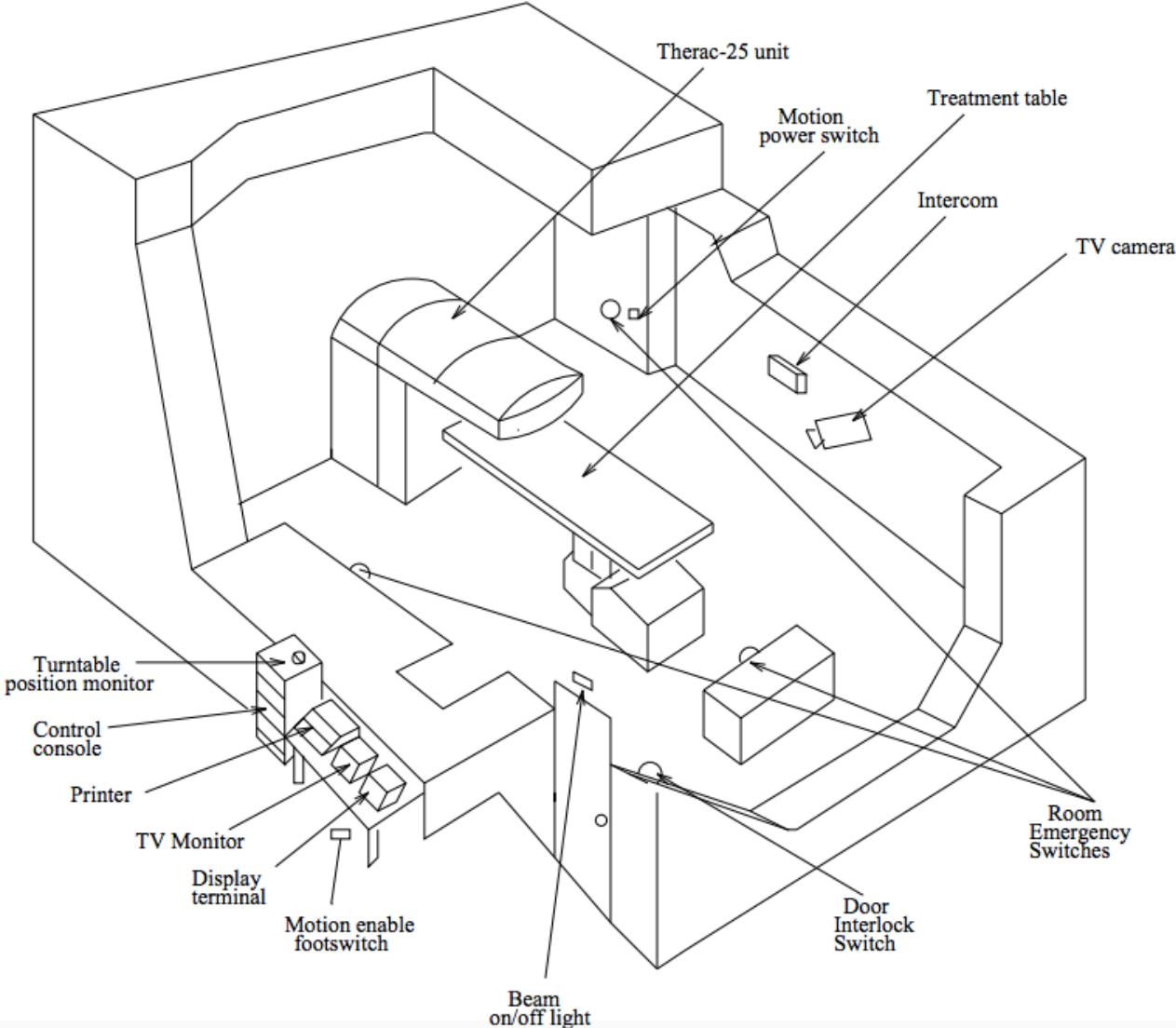
Week 1: Case Study: Therac-25
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Homework 1

- ↗ Available on class website: http://www.munmund.net/courses/spring2021/cs4873/Assignment_I.pdf

- ↗ Due: January 29, 2021 (11:59pm Eastern Time)
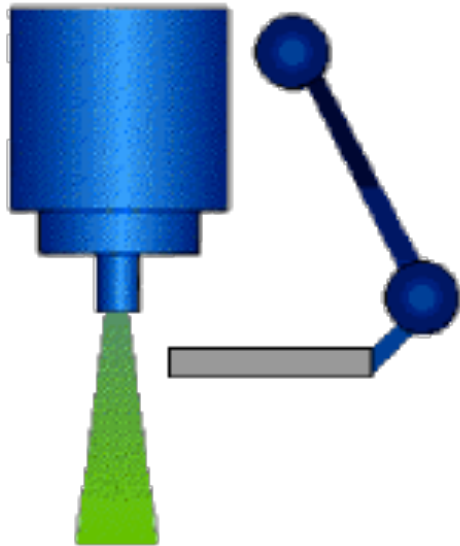
- ↗ Submission on Canvas.

Why you, as a CS major need to know about ethics…
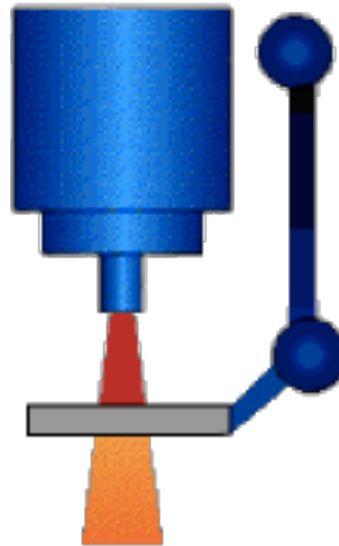
Genesis of the Therac-25

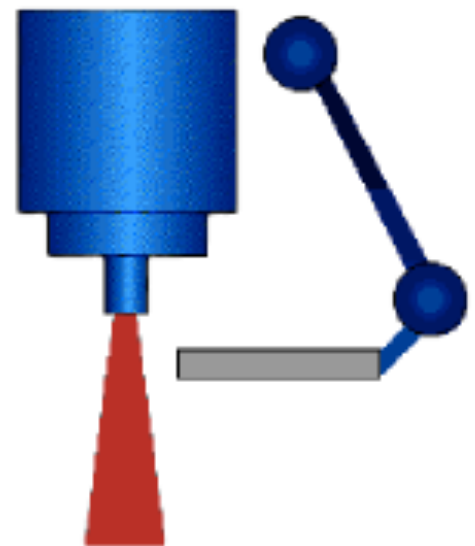low current electron beam was scanned across the field

Electron Mode

high current electron beam was tracked at the target

X-Ray Mode

high current electron beam with no target > 'lightning'

THE PROBLEM

* Role of the Software

The Context

- ↗ Radiation therapy
  - ↗ Many people with cancer were diagnosed and treated, but were also exposed more radiation than they needed

What Went Wrong: Gap in End Users' Understanding

What Went Wrong: Infrastructural Gaps

What Went Wrong: Issues in the Design of Therac-25

What Went Wrong: A Lack of Fault Tolerance

Have we placed too much trust in technology?

Post Mortem

Solution: Incident Learning System

Solution: Defensive Design

Lesson Learned

London (CNN Business) — Google ([GOOGL](#)) says it has developed an artificial intelligence system that can detect the presence of breast cancer more [accurately](#) than doctors.

A study that tested the accuracy of the system, which was developed through a collaboration between the tech giant and cancer researchers, was published Wednesday in the scientific journal Nature.

Related Article: How AI came to rule our lives over the last decade

The program was trained to detect cancer using tens of thousands of mammograms from women in the United Kingdom and the United States, and early research shows it can produce more accurate detection than human radiologists.

According to the study, using the AI technology resulted in fewer false positives, where test results suggest cancer is present when it isn't, and false negatives, where an existing cancer goes undetected.

People involved in the tragedies

- ↗ Company who made the softwares for the accelerometers

- ↗ Programmers and testers behind the softwares

- ↗ Doctors who prescribed medication

- ↗ Staff and technicians who managed the accelerometers

- ↗ ** Think about it for your recitation section!