Engineering Ethics – Ethical Theories

- Understanding Moral Frameworks in Engineering Practice
- Presented by: Dr. Razib Hayat Khan
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Introduction to Ethics

- Ethics: A branch of philosophy dealing with morality
- Ethical engineer: Upholds moral integrity and values
- Two main categories:
- - Consequential Ethics
- - Non-consequential Ethics

Consequential vs. Non-Consequential Ethics

- Consequential Ethics:
  - Morality judged by outcomes (e.g., lying to save a life)
- Non-consequential Ethics:
  - Morality judged by actions themselves (e.g., lying is wrong regardless)

Consequential vs. Non-Consequential Ethics

Consequential:

Focus:

The consequences or results of an action are the primary determinant of its morality.

Example:

Utilitarianism, a common form of consequentialism, judges actions based on their ability to produce the greatest good for the greatest number of people.

Key Idea:

"The end justifies the means" - the outcome of an action determines its moral worth.

Strength:

Can justify actions that produce positive outcomes, even if they seem morally questionable in themselves.

Weakness:

Can be inflexible and may lead to outcomes that are not considered morally right.

Non-Consequential:

Focus:

The intrinsic properties of the action, such as adherence to moral rules, duties, or principles, determine its morality.

Example:

Deontology, a non-consequentialist theory, argues that certain actions are inherently wrong, regardless of their potential consequences.

Key Idea:

Moral duties and obligations must be followed, even if it leads to negative consequences.

Strength:

Provides a clear framework for moral decision-making, based on established rules and principles.

Weakness:

Can be rigid and may not always lead to the best overall outcome.

Consequential vs. Non-Consequential Ethics

Key Differences:

Focus:

Consequentialism prioritizes the outcome of an action, while non-consequentialism focuses on the action itself.

Moral Principles:

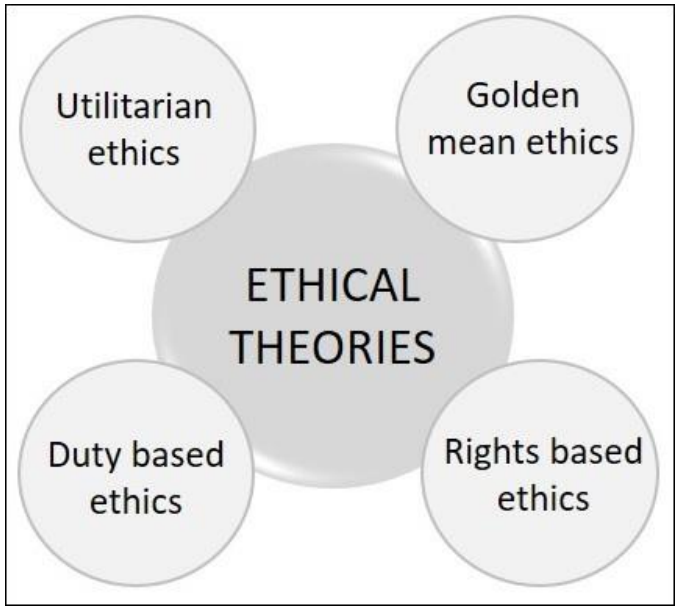
Consequentialism often leads to actions that might seem morally questionable (e.g., lying to save a life) if they produce the best overall outcome. Non-consequentialism, on the other hand, upholds principles like "never lie" or "never kill an innocent person" regardless of the consequences.

Examples:

Utilitarianism is a form of consequentialism that aims to maximize overall happiness.Deontology, a common form of non-consequentialism, emphasizes adherence to moral rules and duties.

Types of Ethical Theories

- Four key theories:
  - Golden Mean (Aristotle)
  - Rights-Based Ethics (John Locke)
  - Duty-Based Ethics (Immanuel Kant)
  - Utilitarian Ethics (John Stuart Mill)



Golden Mean – Aristotle

- Ethics as balance between excess and deficiency
- Emphasis on reason and logic
- Example: Environmental pollution – balance between industrialization and preservation

Golden Mean – Key Concepts

- Practical Wisdom: Discern the right balance
- Internal vs. External Goods:
  - Internal: experience, activity
  - External: money, status
- Over-prioritizing external goods threatens ethical integrity

Golden Mean – Challenges

- Varies with individual reasoning
- Difficult to apply consistently

Rights-Based Ethics – John Locke

- Foundation: Every person has inherent rights
- 'Live and let live' philosophy
- Protects rights to life, liberty, health, and property

Rights-Based Ethics – Key Concepts

- Human dignity is central
- Moral duty: support a just and moral society
- Laws should align with moral values

Rights-Based Ethics – Challenges

- Conflicts between individual rights (e.g., freedom vs. safety)
- Defining limits of personal rights

Duty-Based Ethics – Immanuel Kant

- Universal moral laws, no exceptions
- Moral actions are duties, not consequences
- “Act only on maxims you wish to become universal laws”

Duty-Based Ethics – Four Virtues

- Prudence: Perform duty with respect for life
- Temperance: Restrain from unethical temptations
- Fortitude: Balance between happiness and perfection
- Justice: Treat others as ends, not means

Duty-Based Ethics – Challenges

- Universal rules may not fit every situation
- Risk of rigidity and lack of flexibility

Utilitarian Ethics – John Stuart Mill

- Aim: Maximize happiness for the greatest number
- Morally right = promotes societal well-being
- Cost-benefit analysis used for decision making

Utilitarianism – Two Types

- Act Utilitarianism:
  - Evaluates each individual action
  - Problem: can justify immoral acts if outcomes are good
- Rule Utilitarianism:
  - Follows rules that generally lead to best outcomes
  - Better fit for professional settings

Utilitarianism – Engineering Context

- Example: Cost-benefit analysis for safety systems
- Professional engineers encouraged to follow Rule Utilitarianism

Engineering Theories - Differences

Golden Mean:

Focus: Finding the virtuous middle ground between two extremes of behavior.

Example: Courage lies between the extremes of cowardice and recklessness.

Key Idea: A virtuous person strives to act in accordance with the Golden Mean, avoiding both deficiency and excess.

Duty-Based Ethics:

Focus: Adhering to moral duties and following rules, regardless of consequences.

Example: The duty to tell the truth, the duty to keep promises.

Key Idea: Moral obligations are inherent and must be followed, even if they lead to undesirable outcomes.

Rights-Based Ethics:

Focus: Recognizing and protecting individual rights and freedoms.

Example: The right to free speech, the right to privacy.

Key Idea: Actions are assessed based on their respect for individual rights, regardless of the consequences.

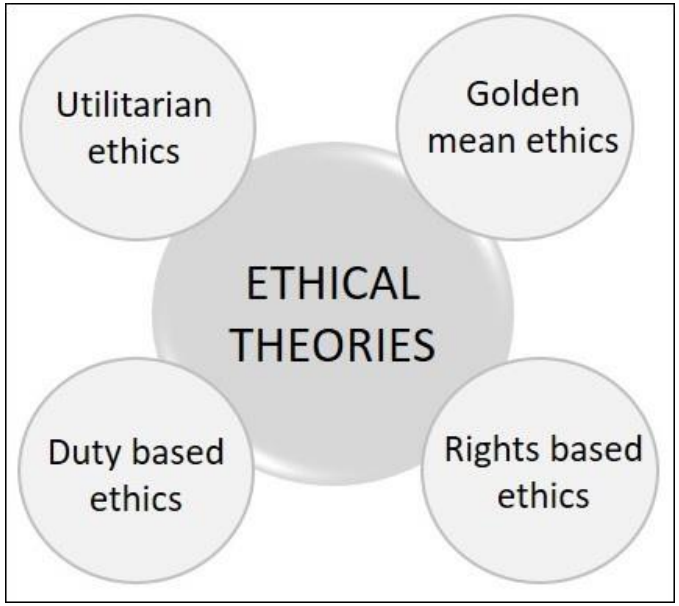
Utilitarianism:

Focus: Maximizing overall happiness and well-being by evaluating the consequences of actions.

Example: Choosing the action that benefits the most people.

Key Idea: The most ethical action is the one that produces the greatest good for the greatest number of people.

Engineering Theories - Differences



Formulating Ethical Theories

- Ethical theories should:
  - Be logically consistent
  - Avoid contradictions
  - Be based on truth
  - Offer guidance in complex situations
  - Align with moral intuition

Uses of Ethical Theories

- Understanding moral dilemmas
- Justifying professional responsibilities
- Bridging personal and professional morality

Summary

- Ethical theories offer frameworks for moral decision-making
- Essential for engineers to uphold societal trust and responsibility
- Application requires judgment, reasoning, and empathy

Q&A / Discussion

- Invite questions
- Discuss application in real engineering scenarios