

# Research Foundations in Computer Science

Unit IV

## Identifying a Research Problem

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# Review of Previous Weeks

- The concept of research
- Importance of research
- Sources of documented research
- Finding previous [documented] research
- Finding current research
- Importance of reading previous research → review of literature

# Where you should be

- ✓ Identified an area of research
- ✓ Compiled a preliminary bibliography of resources related to your research area
- ✓ Identified people, laboratories and/or departments involved with research in your area
- ✓ Narrowed down to a specific area of research

[Started] analyzing the literature on the specific area of research

# Outline for Today

## Identifying a Research Problem

### 1) What is a problem?

1-1 ) What is a research problem?

1-2 ) Source of research problems.

### 2) The need to study a problem.

### 3) Relationship of research problem to study.

### 4) Characteristics of a research problem.

### 5) How to present a Problem Statement?

# 1) What is a Problem?

- A state of difficulty that needs to be resolved
- A question raised for enhancing a solution
- An issue that an investigator presents and justifies in a research study.

# 1-1) What is a Research Problem? (Cont.)

- A distinguished discrepancy between what is and what should be.
- A question why the discrepancy exist.
- At least two possible and reasonable answers to a question.

# 1-2) Sources of Research Problems

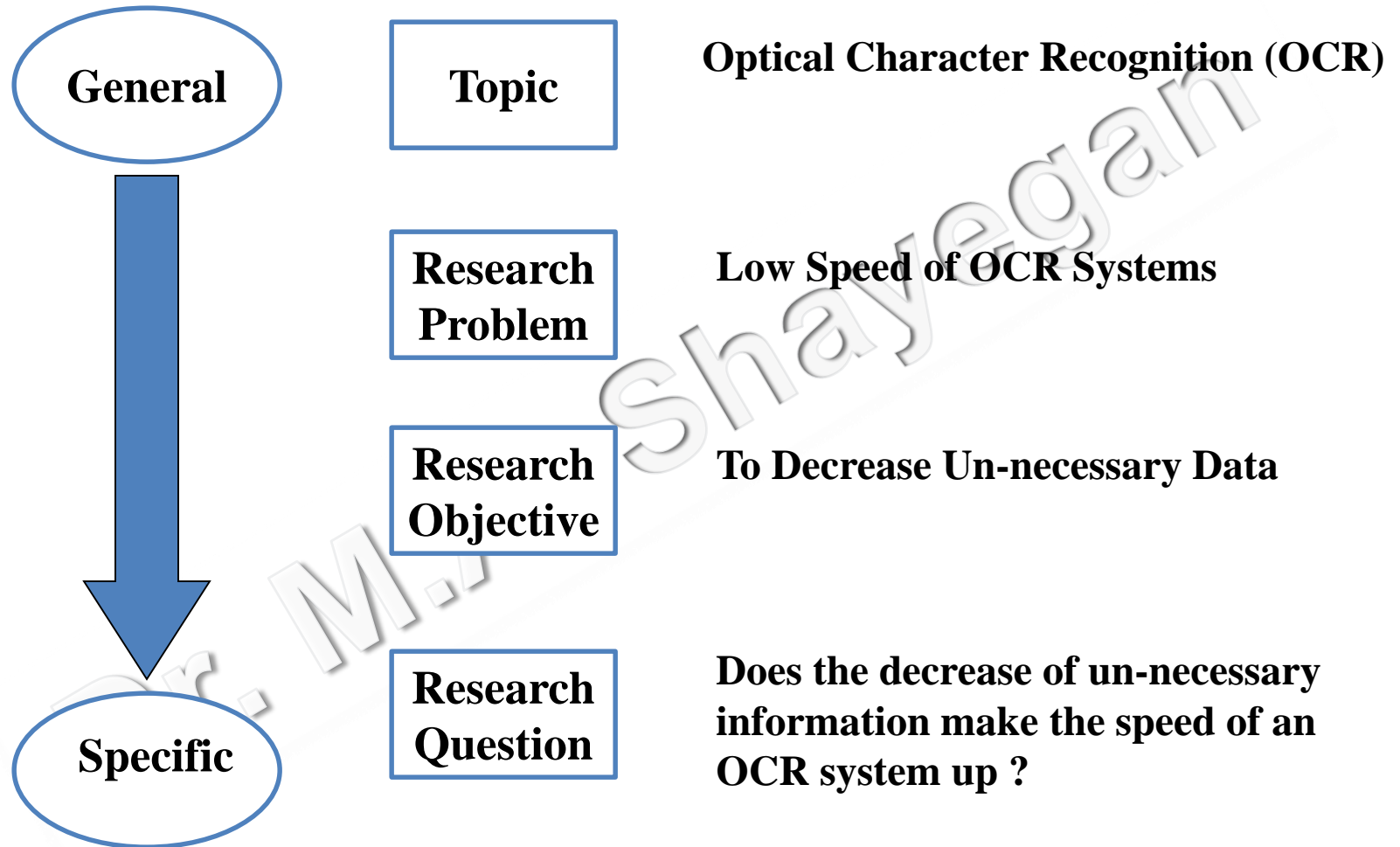
- Problems in everyday life
- Reading research literature
  - **Unexpected and contradictory finding of previous studies.**
  - **Suggestions from other research studies for future research.**
  - **Research projects that can be replicated or applied in new situations.**
- Current research activities by others
- Advice from experienced researchers

## 2) The Need to Study a Problem

- Research is started with a problem.
- Solution to a problem adds to knowledge  
(i.e. Research = New knowledge)



### 3) Relationship of Research Problem to Study



## 4) Characteristics of a Research Problem

- **Can you study the problem?**
  - Do you have access to the research requirements?
  - Do you have the time, resources, skills and ... to carry out the research?
- **Should you study the problem?**
  - Does it advance knowledge?
  - Does it contribute to practice?

# 5) How to present a Problem Statement

- 1) Level of occurrence
- 2) Geographic areas affected
- 3) Characteristic of the population affected (Problem of an especial group)
- 4) Findings of other research studies (possible reasons for the problem )
- 5) Past experience to address the problem (to understand possible solution)
- 6) Problem is related to an on going program activities.
- 7) ...

## 5) How to present a Problem Statement (Cont.)

- One paragraph for each of the key elements
  - Evidence (research, practical, literature)
  - Shortcomings of current situation
  - Audience (who will benefit)
  - How they will benefit
- Heavily reference this section to the literature
- Provide statistics to support trends

# Assignment 4:

## Analysis of the Literature

### **Objective:**

**An analysis of the literature (identified in Assignment 3) to show the problem investigated, objectives, methodology, findings and discussion / follow up.**

### **Approach:**

- 1. Identify at least 5 (or more) resources from your bibliography that are relevant (and available).**
- 2. Extract the relevant information and summarize it.**
- 3. Summarize the information into a table.**

**Submit the literature analysis table of above articles as a printed hard copy to me, till on next two sessions (next two weeks).**

# Format for Report

نام و نام خانوادگی :  
 شماره دانشجویی :  
 شماره تمرین : 4  
 تاریخ تحویل :

جدول خلاصه ادبیات تحقیق در زمینه ..... [Area of Research]

ردیف	منبع	مشکلات مطرح شده	اهداف تحقیق	روش	یافته های تحقیق	بحث
	Citation	Problem(s)	Objectives	Methodology	Main Findings	Discussion
1						
2						
3						
4						
5						