

Research Methodology in Computer Science

What is “Research”?

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What is 'research'?

Research (Dictionary)

Noun

- ① careful or diligent search
- ② studious inquiry or examination
- ③ the collecting of information about a particular subject

Verb

- ① to search or investigate exhaustively
- ② to do research for
- ③ (Example: researching the effects of acid rain.)

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RESEARCH = RE + SEARCH

What is 'research'?

Research (<http://en.wikipedia.org/wiki/Research>)

An **active**, **diligent**, and **systematic** process of inquiry in order to **discover**, **interpret** or **revise facts, events, behaviours, or theories**, or to **make practical applications** with the help of such facts, laws, or theories.

What is 'research'?

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An active, diligent, and systematic process of inquiry in order to discover, interpret or revise facts, events, behaviours, or theories, or to make practical applications with the help of such facts, laws, or theories.

Examples

- Existence of Gravitational Waves (重力波)
- Number of twin primes (孪生质数)
- Vaccine development for COVID-19
- Self drive cars (自动驾驶)

What is a GOOD 'research'?

Types of researches

- 1 A new problem with pioneer works (Awards winner)
- 2 Solve a unsolved problems (Ph.D. thesis, / University faculty)
- 3 Solve an existing problem and gain great improvements (Ph.D / Master thesis)
- 4 Follow others and marginal improvements (Master thesis)
- 5 Trash

Knowledge: A hierarchy

Four words (Hierarchy?)

Knowledge, Data, Wisdom, and Information

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1 Data

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- 1 Data by Observation/Collecting

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- 1 Data by Observation/Collecting
- 2 Information

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- 1 Data by Observation/Collecting
- 2 Information by Statistics/Induction

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- 1 Data by Observation/Collecting
- 2 Information by Statistics/Induction
- 3 Knowledge

Knowledge: A hierarchy

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- 1 Data by Observation/Collecting
- 2 Information by Statistics/Induction
- 3 Knowledge by Integration

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Four words (Hierarchy?)

Knowledge, Data, Wisdom, and Information

- 1 Data by Observation/Collecting
- 2 Information by Statistics/Induction
- 3 Knowledge by Integration
- 4 Wisdom

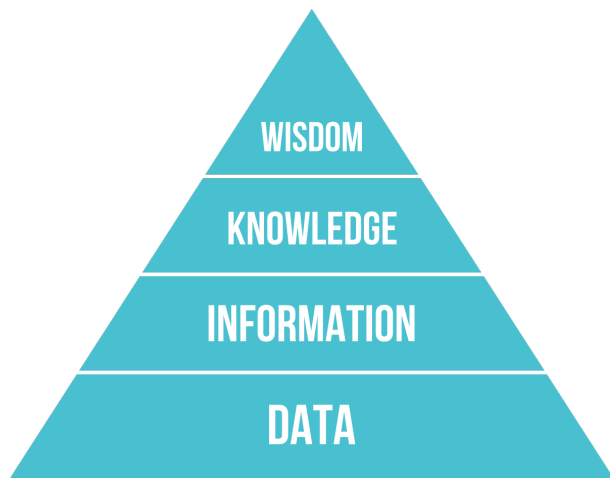
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Knowledge, Data, Wisdom, and Information

- 1 Data by Observation/Collecting
- 2 Information by Statistics/Induction
- 3 Knowledge by Integration
- 4 Wisdom by Deduction

DIKW Pyramid



Discussion: [Any Example?](#)

DIKW Pyramid

TOM SWALEY

