Course : COMP6575 – Research Topics in Computer Science

Effective Period : December 2019

Introduction to Research

Session 01
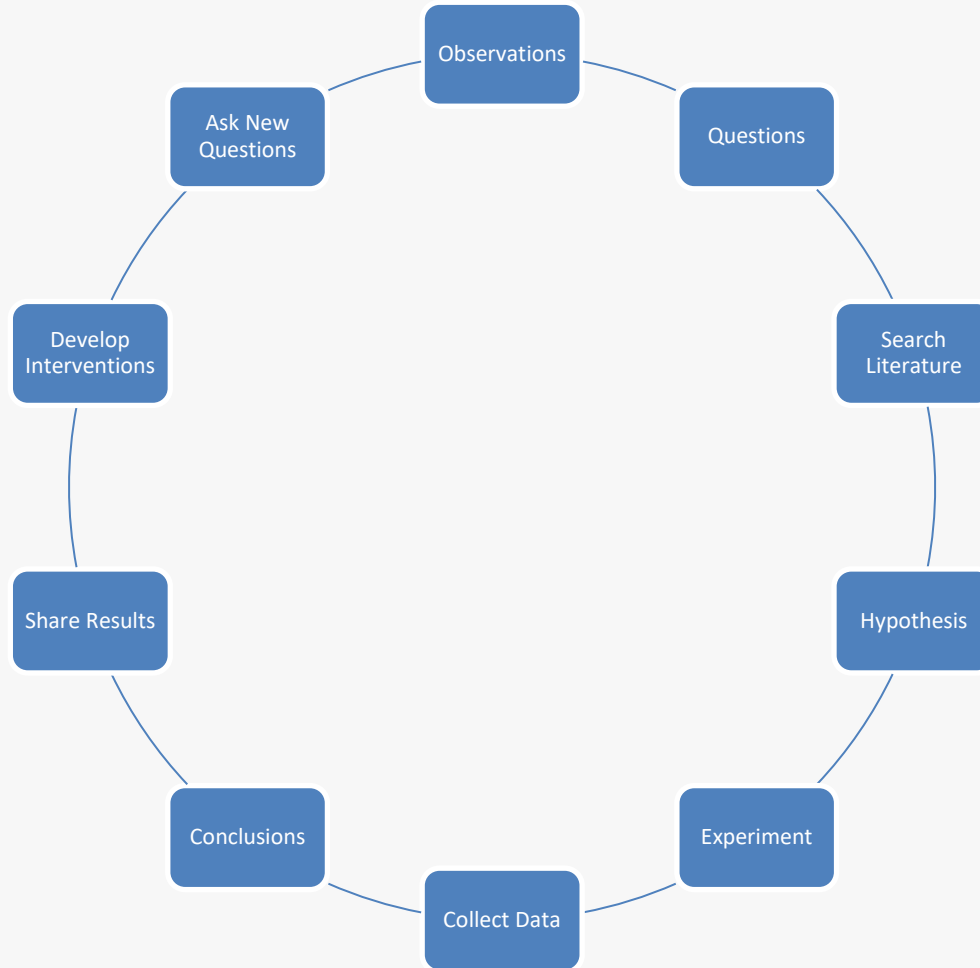
Outline

1. Research definitions

2. Research Lifecycle

3. Research purpose

4. What topics to research?

5. How to research?

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Research Definitions

- Research is a process to discover new knowledge

  ORI The Office of Research Integrity, U.S. Department of Health & Human Services

- Diligent and Systematic inquiry or investigation into a subject in order to discover or revise facts, theories, applications, etc.

  Dictionary.com

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Research Lifecycle

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Research Purpose

- According to Leann Zarah, The main purpose of research :
  1. A tool for building knowledge and for facilitating learning
  2. Means to understand various issues and increase public awareness
  3. An aid to Business success
  4. A way to prove lies and to support truths
  5. Means to find, gauge, and seize opportunities
  6. A seed to love reading, writing, analyzing and sharing valuable information
  7. Nourishment and exercise for the mind

Who need research?

Do you think only this people need research?

- Not only them!
- But ALL of you here are needed to do research in your interest topics to solve all the world problems with your Computer Science skills

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What topics to research?

Research that has been done will have impact to the community

- **Artificial Intelligence**

Google Translate

- During our vacation or work travel, we do not bring our dictionary again, but we are using Google Translate in order to translate automatically with various inputs : text, picture and even documents.

- Hows your life without Google Translate when living abroad?

Research that has been done will have impact to the community

- **Software Engineering**

Automated Software Testing

- Usually, when you are as software developers, we are writing thousand lines of code. The design patterns are introduced to prevent code smells. The scenario are created to calculate the code coverage of the code automatically.

- Imagine if your code are growing and you do the testing manually, how long does it take?

Research that has been done will have impact to the community

- **Multimedia**

Augmented Reality, Virtual Reality, Mixed Reality

- Multimedia is not just creating the games, information kiosk and visualization.
- Have you ever image how can we cure people with the certain phobias?

Research that has been done will have impact to the community
Big Data

- Let us take a good example of future banking system. One topic in banking system is to provide personalized banking solutions to customers.

- Our spending which are integrated with the is one of the valuable assets. The bank use those data in order to offer us a good deal of promotions related with our previous purchased.

Research that has been done will have impact to the community

- **Network**

- In the developing product, most commonly, the traffic and the data shared across the server of even client are increasing day by day.

- How to secure those transactions?

- Is it by the infrastructure or by software?

The only solution is

- To have experience by doing the research in group.
- A strong background problem will lead us to the research questions.

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References

- John W. Creswell. (2017). Qualitative, Quantitative, and Mixed Methods Approaches Research Design:5th edition. SAGE Publications, Inc. ISBN: 978-1-5063-8671-3

- https://ori.hhs.gov/module-1-introduction-what-research

- https://www.dictionary.com/browse/research

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Class' Project

- Create a team consists of 3 members!
- Each team should pick a topic related to computer science topics
- The first draft will be submitted a week before Mid term.
- The final project will be submitted a last topic of this subject
- The output will be a research paper

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