

# **Trans-disciplinary Research Workshop – Big Data Applications**

## **by Dr. Reynold Cheng**

### **Aim**

We are entering the “Age of Big Data” – an extremely large amount of information is created every day, which is revolutionizing science and technology, governments, economy, and international development. Many sources contribute to the Big Data, including the Internet, Wikipedia, social networks (e.g. Facebook), micro blogs, mobile phones, and cameras. The goal of this project is to engage students in examining the critical issues that they could encounter in the Age of Big Data. We will examine how Big Data is affecting our society and daily lives. We will perform an in-depth study on existing Big Data applications, and will develop an interesting Big Data application.

### **Content**

We will first give an overview about Big Data. We will examine the benefit of Big Data in different areas. We will also study the resulting social, legal, security and privacy problems (e.g., the recent responses about the Right to be Forgotten). Students will then develop a proposal about a novel or groundbreaking Big Data application. The application can be, but not limited to the following:

- A novel Big Data application that will be very useful to special domain (e.g., medical science);
- An application that makes use of a vast amount of information to facilitate the student’s research; or
- An application that has been implemented in other places over the world, but has not been used in Hong Kong.

The proposal should aim at convincing individuals, research communities, enterprises, or authorities to adopt the suggestion in making use of the proposed application. Specifically, the proposal should give:

1. A detailed discussion of the application, explaining:
  - a. What data would be used?
  - b. How would the data be used?
  - c. How should the solution be implemented?
  - d. How to organize and store the data to be used in the application?
2. A background survey on related applications that have been previously proposed and used. Compare and contrast their advantages and disadvantages against those of the application.
3. An analysis of the following aspects about the application:
  - a. Is it making our life better?
  - b. Would it affect people’s privacy?
  - c. What is its impact on moral and social values?
  - d. Is the application reliable and secure to use?

## **Organization**

The workshop consists of two 3-hour sessions, to be held on 2<sup>nd</sup> and 16<sup>th</sup> December 2015 respectively. There will be readings, intense discussions, proposal writing, as well as poster presentation. Students in groups of 3-4 will at the end of the first workshop be required to draw up a concept plan (3 to 5 pages) on how to apply Big Data methods to their own research. The assignments would be submitted before the start of the second workshop. The teacher will give feedback to students during the second workshop, and guide them to produce their work into posters. A poster session along with a competition will be held to showcase students' work.

## **Workshop Registration**

This workshop is limited to a maximum of 30 students. Prerequisite: creativity, and passion to develop big data applications! Experience in handling large databases a plus, but not necessary.

## **Tasks**

Each group of students will prepare a 3-page proposal showing a good understanding of the issues addressed in the workshop and how they apply to the student's research area(s); and develop a poster from the proposal for showcase and presentation in a competition for Trans-disciplinary Challenge Award.

## **Outcomes**

At the end of the workshop, students will develop and demonstrate their awareness of the following:

1. How Big Data impacts different aspects of the society;
2. Effect of Big Data on social and moral values;
3. Protection of personal data, or new kinds of data appearing in the future; and
4. Basic principles of organizing and searching Big Data.